REPORT RESUMES

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LONG-TERM STUDY OF EDUCATIONAL EFFECTIVENESS OF NEWLY FORMED CENTRALIZED SCHOOL DISTRICTS IN RURAL AREAS.

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THE BASIC PURPOSES OF THIS STUDY WERE--(1) TO ASCERTAIN WHETHER OR NOT SCHOOL DISTRICT REORGANIZATION IS WORTHWHILE IN TERMS OF TIME, EFFORT, AND EXPENDITURE OF FUNDS, AND (2) TO DETERMINE THE EFFECTS OF SUCH SCHOOL DISTRICT REORGANIZATIONS ON THE EDUCATIONAL OUTCOMES OF THE SCHOOL. THE SAMPLING CONSISTED OF 10 WISCONSIN COMMUNITIES--5 WITH REORGANIZED AND 5 WITH NONREORGANIZED SCHOOL DISTRICTS. THE COMMUNITIES IN THE TWO GROUPS WERE MATCHED ON THE BASES OF SUCH FACTORS AS WEALTH, POPULATION, TOPOGRAPHY, TYPE OF FARMING, PROPINQUITY TO URBAN AREAS, SIZE, AND DENSITY OF POPULATION. ALL FIRST-GRADE CHILDREN (CIRCA 700) IN THESE COMMUNITIES WERE STUDIED. LONGITUDINAL STUDIES OF THESE CHILDREN WILL EXTEND WELL PAST THE TERMINATION DATE OF THIS PROJECT--THEY WILL BE RESTUDIED INTENSIVELY AT GRADES 6, 9, AND 12 AND ALSO 5 YEARS AFTER THEIR GRADUATION FROM HIGH SCHOOL. A WIDE RANGE OF DATA WERE COLLECTED ON THE TEACHERS, STUDENTS, ADMINISTRATORS, AND COMMUNITY CHARACTERISTICS OF THE 10 DISTRICTS. ON 13 SEPARATE TEACHING AIDS AND SUPPLEMENTARY MATERIAL AND ACHIEVEMENT TEST SCORES THE ADVANTAGE FAVORED REORGANIZED SCHOOLS. EXPENDITURES AND SOCIOECONOMIC CONTACTS RELATED NO SIGNIFICANT CHANGES. FURTHER RESEARCH IS RECOMMENDED. (GC)

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Long-Term Study of
EDUCATIONAL EFFECTIVENESS
# of Newly Formed Centralized School Districts in Rural Areas

Cooperative Research Project No. 375

B. W. Kreitlow

Department of Agricultural and Extension Education
Department of Education — University of Wisconsin, Madison
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Foreword

This study began in 1949 with the cooperation of county superintendents, administrators, teachers, parents, and students of the schools in the ten communities studied. Financial aid and graduate student assistance on the research came from several sources, including the Graduate School, Department of Education, Department of Agricultural and Extension Education, Cooperative Extension Service, and the Numerical Analysis Laboratory of the University of Wisconsin. The World Book Company, the Personnel Press, the California Test Bureau, and the Educational Testing Service have made tests available at less than retail cost as a means of encouraging this project. The Cooperative Research Program of the Office of Education, U. S. Department of Health, Education, and Welfare has helped finance the program since 1958.

The data gathered in this project is so extensive that only the hypotheses of pressing immediate value have been tested. Considerable data in the initial study remain to be summarized and reported. Analysis of data in a replication begun in 1954-55 will be completed and compared with the initial findings. Extensive longitudinal data available permit investigation of special problems not planned for in the initial design.

Contents

Page

FOREWORD ii

CHAPTER I. PURPOSES 1

CHAPTER II. REVIEW OF RELATED LITERATURE 3
  History 3
  Research 7

CHAPTER III. DESIGN AND METHODOLOGY 12
  Design 12
  Sample 12
  Hypotheses 15
  Methodology 16
    Data Used 16
    Data Collecting Instruments 16
    Standardized Tests 17
    Inventories and Ratings 18
    Error Limit for the Project 18
    Statistical Analyses 18
    Summary 19

CHAPTER IV. ANALYSIS OF DATA 20
  Opportunities Available 20
    Teaching Aids and Materials 20
    Teacher Qualifications 23
    Special Assistance 25
    Other Opportunities 26
  Achievement 27
    Academic 27
    Personal and Social 33
  Expenditure 41
    Basic Study 41

CHAPTER V. SUMMARY, CONCLUSIONS, AND FURTHER RESEARCH 44
  Summary 44
    Opportunities Available 45
    Achievement and Personal and Social Adjustment 45
    Expenditure 46
  Conclusions 47
    Opportunities 47
    Achievement 47
    Expenditure 48
    Socio-Economic Contacts 48
  Further Research 48
    In Line with Initial Objectives 48
    Beyond Initial Objectives 48

BIBLIOGRAPHY 49
  Books 49
  Bulletins, Journals and Other Publications 49
  Laws 51
  Manuscripts and Theses 51

List of Tables

TABLE Page

I. Comparison of the Reorganized (Experimental) and Non-reorganized (Control) Communities on Selected Factors 15

II. Availability of a Radio in Classrooms at First and Sixth Grade in Reorganized and Non-reorganized School Communities 20

III. Number of Educational Radio Programs Used Weekly at Grade Six in Reorganized and Non-reorganized School Communities 20

IV. Availability of Slide Projectors in Classrooms at First and Sixth Grade in Reorganized and Non-reorganized School Communities 21

V. Availability of a Movie Projector in Classrooms at First and Sixth Grade in Reorganized and Non-reorganized School Communities 21

VI. Availability of a Record Player in Classrooms at Sixth Grade in Reorganized and Non-reorganized School Communities 21

VII. Availability of a Piano in Classrooms at First and Sixth Grade in Reorganized and Non-reorganized School Communities 21

VIII. Availability of Basic Science Equipment at Sixth Grade in Classrooms of Reorganized and Non-reorganized School Communities 22

IX. Availability of Basic Athletic Equipment at Sixth Grade in Classrooms of Reorganized and Non-reorganized School Communities 22

X. Availability of Art Materials at Sixth Grade in Classrooms of Reorganized and Non-reorganized School Communities 22

XI. Availability of Up-to-Date Maps at Sixth Grade in Classrooms of Reorganized and Non-reorganized School Communities 22

XII. Availability of Subject Matter Corner at Sixth Grade in Classrooms of Reorganized and Non-reorganized School Communities 23

XIII. Availability of a Project Work Table at Sixth Grade in Classrooms of Reorganized and Non-reorganized School Communities 23

XIV. Availability of Collateral Reading at Sixth Grade in Classrooms of Reorganized and Non-reorganized School Communities 23

XV. Number of Years of Training Beyond High School as Reported by First and Sixth Grade Teachers in Classrooms of Reorganized and Non-reorganized School Communities 24

XVI. Attendance at Summer School During Past Two Years as Reported by First and Sixth Grade Teachers in Reorganized and Non-reorganized School Communities 24

XVII. Days of In-service Training During Academic Year as Reported by First and Sixth Grade Teachers in Classrooms of Reorganized and Non-reorganized School Communities 24

XVIII. Visitation of Classrooms During Past Year for Purpose of Improving Teaching Methods as Reported by First and Sixth Grade Teachers in Classrooms of Reorganized and Non-reorganized School Communities 24

XIX. Availability of Specialist in *Music* in First and Sixth Grade Classrooms of Reorganized and Non-reorganized School Communities 25

XX. Availability of a Specialist in *Art* in First and Sixth Grade Classrooms of Reorganized and Non-reorganized School Communities 25

XXI. Availability of Specialist to Help Handicapped in First and Sixth Grade Classrooms of Reorganized and Non-reorganized School Communities 25

XXII. Availability of Special Physical Education Teacher in First and Sixth Grades in Classrooms of Reorganized and Non-reorganized School Communities 25

XXIII. Availability of a Guidance Specialist at First and Sixth Grades in Classrooms of Reorganized and Non-reorganized School Communities 26

XXIV. Provision of Accident Insurance for all Students in First and Sixth Grade in Classrooms of Reorganized and Non-reorganized Communities 26

XXV. Incidence of Central Heating Units in First and Sixth Grade Classrooms of Reorganized and Non-reorganized School Communities 26

XXVI. Incidence of Telephones in School Buildings of First and Sixth Grade Reorganized and Non-reorganized School Communities 26

XXVII. Incidence of School Lunch Program Furnished by Schools in First and Sixth Grade Classrooms of Reorganized and Non-reorganized School Communities 26

TABLE Page

XXVIII. Differences Between the Mean Scores on Achievement Tests of Ninth Grade Girls in the Reorganized Part of Reorganized Communities and in the Non-reorganized Communities 28

XXIX. Differences Between the Mean Scores on Achievement Tests of Ninth Grade Girls in the Total Reorganized Communities and in the Non-reorganized Communities 28

XXX. Differences Between the Mean Scores on Achievement Tests of Ninth Grade Girls in the Reorganized Part of Reorganized Communities and in the Non-reorganized Part of These Same Communities 28

XXXI. Differences Between the Mean Scores on Achievement Tests of Ninth Grade Boys in the Reorganized Part of Reorganized Communities and in the Non-reorganized Communities 29

XXXII. Differences Between the Mean Scores on Achievement Tests of Ninth Grade Boys in the Total Reorganized Communities and in the Non-Reorganized Communities 29

XXXIII. Differences Between the Mean Scores on Achievement Tests of Ninth Grade Boys in the Reorganized Part of Reorganized Communities and in the Non-reorganized Part of These Same Communities 29

XXXIV. Mean Achievement and Henmon-Nelson Intelligence Scores in Large, Medium, and Small Schools 30

XXXV. Analysis of Variance for Mean Achievement Scores among Large, Medium, and Small Schools 31

XXXVI. Mean Intelligence and Achievement Scores for All Students and for Farm Students in Large, Medium, and Small Reorganized Districts 32

XXXVII. Analysis of Covariance Controlling Intelligence and Comparing Achievement Among Farm Students in Large, Medium, and Small Reorganized Districts 32

XXXVIII. Differences between Percentages of Sixth Grade Boys in Reorganized (R only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Sense of Personal Worth Section of the California Test of Personality 33

XXXIX. Differences between Percentages of Girls in Reorganized (R only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Sense of Personal Worth Section 34

XL. Differences between Percentages of Boys in Reorganized (R only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Feeling of Belonging Section 34

XLI. Differences between Percentages of Girls in Reorganized (R only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Feeling of Belonging Section 34

XLII. Differences between Percentages of Boys in Reorganized (R only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Social Standards Section 35

XLIII. Differences between Percentages of Girls in Reorganized (R only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Social Standards Section 35

XLIV. Differences between Percentages of Boys in Reorganized (R only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Social Skills Section 36

XLV. Differences between Percentages of Girls in Reorganized (R only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Social Skills Section 36

XLVI. Differences between Percentages of Boys in Reorganized (R only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Community Relations Section 36

XLVII. Differences Between Percentages of Girls in Reorganized (R only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Community Relations Section 36

XLVIII. Analysis of Variance of Total California Test of Personality Scores for Boys and Girls in Reorganized (R only) and Non-reorganized School Communities (NR) 37

XLIX. Complete Analysis of Variance of Total California Test of Personality Scores for Boys and Girls in Reorganized (R only) and Non-reorganized School Communities (NR) 37

L. Sums of Scores on California Test of Personality Achieved by Boys and Girls in Reorganized (R only) and Non-reorganized School Communities (NR) 38

LI. Summary of Differences between Boys and Girls in Reorganized (R only) and Non-reorganized Communities (NR) on Individual Items of the California Test of Personality 38

LII. Summary of F Ratios Obtained by an Analysis of the Variance between and Within Four Groups (Boys and Girls in Reorganized [R only] and Non-reorganized Communities [NR]) 38

LIII. Summary of F Values Obtained by the Analysis of Variance of Total Test Section Scores of the California Test of Personality for Boys and Girls in Reorganized (R only) and Non-reorganized School Communities (NR) 38

TABLE Page

LIV. Summary of F Values Obtained by the Analysis of Co-Variance of Sense of Personal Worth and Community Relations Scores between Boys in Reorganized (R only) and Non-reorganized School Communities (NR) with Influence of Selected Variables Removed 39

LV. Division of 38 Reorganized Districts into High, Medium, and Low Operating Expenditure Schools 42

LVI. Summary Data of Size-Expenditure-Achievement and Intelligence Factors Among All Farm Students in High, Medium, and Low Expenditure Reorganized School Districts 43

LVII. Analysis of Residuals for the Analysis of Co-variance between Achievement for Farm Students from High, Medium, and Low Expenditure Schools When Intelligence is Controlled 43

LVIII. A Comparison of the Lecture and Bulletin Used in Presenting Research Findings to School Board Members in Racine County 56

LIX. A Comparison of the Lecture, Bulletin, and Film in Presenting Research Findings to Leaders of Marinette County Homemakers Clubs 56

LX. A Comparison of the Lecture, Bulletin, and Film in Presenting Research Findings to Members of Marinette County Homemakers Clubs 57

LXI. A Comparison of the Lecture, Bulletin, and Films in Presenting Research Findings to Manitowoc County Teachers and County College Students 57

LXII. Analysis of Variance for Research Findings Presented by Bulletin and Television with Immediate and Delayed Responses 58

LXIII. A Comparison of Immediate and Delayed Response to Research Findings Dispersed by Bulletin and Television to Leaders in Chippewa County Homemakers Clubs 58

LXIV. A Comparison of Bulletin and Television in Dispersion of Research Findings to Leaders in Chippewa County Homemakers Clubs Measured by Immediate and Delayed Response 58

LXV. A Comparison of the Lecture, Bulletin, Film, and Television in Dispersing Research Findings by Various Procedures to Five Groups of Participants 58

LXVI. A Comparison of the Number of Participants at Various Grade Attainment Levels with Mean of Correct Scores 58

LXVII. Mean Scores and Grade Attainment of Participants Classified by Media Used in Dispersing Research Findings 59

LXVIII. Distribution of Group Participants by Media and Grade Attainment 60

List of Illustrations

FIGURE — Page
1. Research Design — Longitudinal Study of Newly Formed Centralized School Districts in Wisconsin 13
2. Locations of the 10 Selected Communities in Wisconsin 14
3. Distribution of 1958-59 Total Net Enrollment in 39 Reorganized Districts of Wisconsin 30
4. Distribution of 5-Year Average 1954-58 Net Enrollment in Elementary Schools in 39 Reorganized Districts of Wisconsin 30
5. Distribution of Mean Achievement Scores in Reading and Mathematics for 39 Reorganized School Districts of Wisconsin 31
6. Distribution of Mean Henmon-Nelson Raw Scores for 39 Reorganized School Districts of Wisconsin 31
7. Distribution of Per Pupil Expenditures for the 39 Reorganized School Districts of Wisconsin 32
8. Mean Expenditure for Instruction Per Pupil at Sixth Grade in 10 Reorganized and Non-reorganized School Communities in Wisconsin 42
9. Boys' and Girls' Mean Achievement Scores at Sixth Grade in 10 Reorganized and Non-reorganized School Communities in Wisconsin 43

Appendixes

Page
A. Which of Four Media Communicated Research Results Most Effectively? 52
    Purpose 52
    Background 53
    Design of the Media Study 54
        Selection of the Media 54
        Nature of the Content and the Presentation 54
        Sample and Procedures 55
        Hypotheses 56
    Findings 56
        Among and Between Media in Separate Groups 56
        Among and Between Media Totals of Five Groups 56
        Educational Level of Participants 58
    Summary and Conclusions 59
    Bibliography for Appendix A 61
        Bulletins, Journals and Other Publications 61
        Manuscripts and Theses 61
B. Special Bulletin 6, *School District Reorganization . . . Does it make a difference in your child's education?* .... insert
C. Citizens' Check Sheet 62
D. Parents' Questionnaire 64
E. Teacher Interview Schedule 67
F. The Purposes and Processes of Education 69
G. Activity Questionnaire 70
H. Interest Record 72
I. Related University of Wisconsin Studies 74

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Chapter I: Purposes

THE BASIC PURPOSES of this study are (1) to ascertain whether or not school district reorganization is worthwhile in terms of time, effort, and expenditure of funds, and (2) to determine the effects of such school district reorganization on the educational outcomes of the school.

Reorganization of school districts is one of several controversial educational issues facing professional educators, lay leaders, school boards, taxpayers, and society in general. This issue is particularly critical in Nebraska, North and South Dakota, Minnesota, Iowa, Missouri, Michigan, and Wisconsin. A survey conducted in 1959 showed that of 24,000 one-room schools operating in the United States at that time, some 15,000 were in these eight states.[1]

The problem of reorganizing school districts has been apparent in varying degrees to educational leaders for the past century. For instance, in a summary of annual school reports, Patzer reported that the state superintendent began to express dissatisfaction with the schools and the school district system shortly after Wisconsin became a State.[2] In the annual school report of 1852, Superintendent Azel P. Ladd decried the poor buildings and facilities and the general lack of physical comfort. Earlier, in the first annual report, Superintendent Root had reported 804 schools in the state valued from six to fifty cents each.[3]

To provide revenue for better schools, equipment, and teachers, the state superintendent urged the town superintendents to attach territory to districts that intended to build bigger and better school houses. He advised consolidation of smaller districts into bigger and wealthier districts. In his report of 1854, Superintendent Ladd envisioned consolidation of schools so as to furnish "large, comfortable, convenient schools adorned with taste, well ventilated and divided into compartments for pupils of different sizes, a man as principal at a monthly salary of fifty dollars, with female helpers with monthly salaries of twenty dollars."[4]

Superintendent Ladd recognized that town superintendents failed to supply the needed leadership to carry out the advice of the state superintendent. They were motivated by politics and a desire to hold office rather than by an interest in better education. They realized that many people wanted schools near their homes and so did not oppose the wishes of voters.[5]

In 1861, a law was passed by the Wisconsin Legislature which replaced the town superintendents with elected county superintendents. This legislation was followed by school district reorganization bills either passed, repealed or amended in almost every session of the legislature since. This legislation gave power to the State Superintendent of Schools, and revoked the power, established a system of town (township) school districts, then later tried to establish county school districts.

In 1947 a law established a county school committee and placed the state superintendent in a strictly advisory capacity. This law included a provision for increased transportation aids for both elementary and high school districts. These aids were limited to districts which had suspended their schools, with the exception of those which could not find qualified teachers or whose buildings had been destroyed. The amount of high school tuition permissible was increased and the limitation of the mill rate was changed from the local assessed valuation to the equalized valuation.

The Reorganization Law of 1949 was passed to further assure the local autonomy of rural people and to make the county school committees more palatable to the general rural public in Wisconsin.[6] In the thirty-third annual report of the Wisconsin Department of Public Instruction, the state superintendent noted that by 1948 some forty-two newly reorganized districts had been listed and that the total number of one-room schools closed between 1946 and 1948 was 242.[7]

Summarizing a report of newly reorganized school districts in 1950 in Wisconsin, Kreitlow noted that "we have no newly reorganized areas in this state that meet all of the standards of good organization, and but four we might look to as districts approaching the attainment of these standards."[8]

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[1] M. C. S. Noble and Howard A. Dawson, *Handbook on Rural Education*, Washington, D. C.: Department of Rural Education, N.E.A., 1961, pp. 55-63.

[2] Conrad E. Patzer, *Public Education in Wisconsin*, Issued by John Callahan, State Superintendent of Public Instruction, Madison, Wisconsin, 1924, p. 5.

[3] Azel P. Ladd, State of Wisconsin, *Annual School Report*, Superintendent of Public Instruction, Madison, Wisconsin, 1854.

[4] *Ibid.*

[5] Roland Arthur Koyen, *An Analytical Study of Two Types of School Districts*, Doctor's Thesis, University of Wisconsin, Madison, Wisconsin, 1951, p. 18.

[6] *Ibid.*, p. 56.

[7] State of Wisconsin, 33rd Report, Department of Public Instruction, State Superintendent of Public Instruction, Madison, 1948, p. 38.

[8] Burton W. Kreitlow, "Wisconsin's Newly Reorganized School Districts," University of Wisconsin, Madison, Unpublished Manuscript, 1950, p. 2.

The continuing problem of reorganizing Wisconsin school districts stimulated this study. The study aims (1) to determine whether or not there are significant differences in opportunities provided the youngsters attending reorganized and non-reorganized schools, (2) to determine whether or not there are significant differences in academic and social achievement of youngsters attending reorganized and non-reorganized schools, (3) to determine the relationship between academic achievement and expenditure for education and to determine whether or not there are differences in these relationships between reorganized and non-reorganized school districts, and (4) to determine whether or not there are any differences in the amount of farmers' social and economic contacts with the village center between the reorganized and non-reorganized school districts.

A 4-H study was added to the on-going Longitudinal Study of School District Reorganization in 1954. Earlier very little, if any, longitudinal research had been carried on in 4-H Club work. Incorporating 4-H Club work into the study was easy, as all ten of the communities being studied had 4-H Clubs in operation.[1]

Pursuant to an agreement in the contract between the University of Wisconsin and the U. S. Office of Education, a third facet was developed and added to the Longitudinal Study in 1960. This third phase was prompted by the problem of selecting the most effective medium to convey the study results to the public. Appendix A is a report on the findings of this added facet of the study.

One of the advantages of longitudinal research in the field of education is this possibility of adding to the original study. The two "periphery studies" were added to the basic longitudinal research with considerable ease. Many other valid, valuable, and needed pieces of additional research could be added to the basic longitudinal study if time, funds, and adequate staffing were available.

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[1] The 4-H Club aspect of the total study will be treated in detail in other documents rather than in this report.

Chapter II: Review of Related Literature

THE LITERATURE RELATING to school reorganization is reviewed in two parts. The first, *History*, will deal specifically with the background of school reorganization in Wisconsin. It will develop a perspective for the present study in ten Wisconsin communities. The second part, *Research*, will review significant recently published research on school reorganization. This review covers research throughout the United States, including previously published portions of the total project reported here.

History

Prior to 1884, Wisconsin school legislation gave the school district almost complete independence in its organization, maintenance, and control. Wisconsin's public schools were not free. The idea of free public schools had not yet been widely accepted. Support for schools in Wisconsin came partly from taxes levied by the district, and partly from a per capita tax known as the Rate Bill, from the "wood tax", and from collections made by the teachers from the patrons of the schools.[1]

The legislature did create the county, town, (township) and school district and delegated them certain powers in regard to education. This implied that public education was primarily a state function. The writers of Wisconsin's constitution recognized the importance of public education supported by public taxation to the general welfare and progress of the state.[2]

A move began in 1855 to secure a larger unit than the district for school administration. However, legislation which permitted a township system of school government wasn't passed until 1869.[3] Under this comprehensive act, each town (township) could be declared a district and each independent district, a sub-district. It made the clerks of each sub-district a board of school directors and authorized such boards to change boundaries of districts and to sell buildings or sites no longer needed. These boards could also manage the schools, and hire and supervise teachers. Support was to be voted by electors of the town (township) and supplied by a tax on property of the town.[4]

Patzer[5] pointed out that only nineteen towns were organized under the town system of school organization by 1890. Most of those were in the northern part of the state where voters could levy a high tax on unoccupied lands whose owners lived elsewhere. Because of the attitudes of the voters and the legislature, the law never was effective, and in 1911 an act was passed which repealed the law of 1869.

This 1911 act required the town board of supervisors to create suitable independent districts after granting public hearings. In effect, it re-established the districts and joint districts as they had been before the township system was adopted. However, after 1911 no district could be formed without at least 15 persons of school age residing in its boundaries at the time of its formation. This last provision was expected to prevent the formation of excessively small districts.[6]

Superintendent C. P. Cary[7] pointed out that "the weakness of the system of rural schools is poor teachers, poor attendance, waste of funds, and poor facilities." He considered consolidation the remedy for this situation. Cary cited the work of Superintendent Emery and the laws already enacted allowing consolidation. He discussed the advantages of consolidation, already demonstrated in Massachusetts. He also listed the objections to consolidation, which are much the same today. For example, people object to taking small children away from home, and predict a decrease in property values and a host of transportation problems.[8]

The efforts of Superintendent Cary and other leading Wisconsin educators between the years of 1897 and 1913 led to the Consolidation Act of 1913. Under this act, 15 per cent of the voters in two or more contiguous districts could petition for consolidation. It also promised state aid to help build and equip a new school building in a consolidated district. The amount of aid depended upon the number of departments. The electors could also authorize the school board to contract transportation for all pupils or could pay parents for transporting their children. Amendments in 1915 and 1917 required the school board of the consolidated districts to furnish transportation for pupils between the ages of 6 and 16 who lived more than 2 miles from the school.[9]

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[1] Koyen, Op. Cit., p. 13.
[2] *Ibid.*, p. 15.
[3] *Ibid.*, pp. 23-24.
[4] *Ibid.*, p. 23.
[5] Patzer, Op. Cit., p. 84.
[6] Koyen, Op. Cit., p. 26.
[7] State of Wisconsin, Biennial Report of the State Superintendent of the State of Wisconsin, Madison, Wisconsin, 1904, pp. 3-16.
[8] Koyen, Op. Cit., p. 27.

Many people saw that little progress was being made in school district consolidation under the direction of local initiative and the existing law, which authorized the town boards of supervisors, village boards of trustees and city councils to change district boundaries. Accordingly, a bill providing for a county board of education with power to consolidate rural districts was introduced in the legislature in 1909. It failed to pass both in 1909 and again in 1911. When the bill was introduced in the legislature in 1913, it was passed after much debate and some amending.

The act provided for a county board of education, consisting of five members, for each county. This board was to have full authority to organize, alter, or consolidate school districts, being given the powers previously held by town boards, village boards, and city councils. It was to follow the procedures previously provided for and the same method of appeal was available.[10]

Enactment of the 1913 bill providing for consolidation and the creation of county boards of education suggested that progress in district consolidation was imminent. However, Governor Phillipps recommended its repeal to the legislature in January of 1915, stating that the boards were "practically without duties," and there was general complaint because of the unnecessary expenditure of money. In spite of all that the school men of the state could do to retain it, the law was repealed and the previous laws relative to the creation, alteration, and consolidation of school districts were restored. The local district was still supreme in the school district organization of the state.[11]

In his biennial report of 1918[12] Superintendent Cary discussed the development of state graded schools. He pointed out that this method of consolidation satisfies the desire for better educational programs and takes into account the public opposition to centralization.

The report of 1920[13] under the title, "Educational Progress in Wisconsin," states,

> There are many poor buildings and immature teachers. There has been some improvement in scholarship, texts, and equipment in the last 30 years, but not in buildings. It is pointed out that educational opportunities for rural children are meager. It is suggested that great improvement could be provided by consolidation of districts, not the type of unplanned, piecemeal consolidation that has been practiced thus far under the existing inadequate laws, but consolidation based on county-wide surveys to determine the best areas of consolidation. A bill to provide for a unified county system of education is proposed for consideration by the legislature of 1921.

Nothing seems to have come of it.

George S. Dick wrote the section entitled "School Consolidation" in the biennial report of 1922.[14] He defines consolidation as including state graded and union free high schools. The following are stressed as being important: (1) bringing the school into the community and the community into the school; (2) 12 years of education including vocational training; (3) use of the school building as a community center; (4) a larger tax base; (5) a sufficient number of pupils enrolled to insure efficient use of teachers; and (6) disregard for political boundaries in organizing a school district.

Referring to the legislation of 1923, Dick advocated that a majority vote of the electors in the area to be consolidated be sufficient to insure consolidation, rather than requiring a majority vote of the electors of each district.[15]

In the 1923 legislation the authority to create, alter, or consolidate districts remained as it had been, with town boards, village boards, and city councils. However, the law forbid alteration of boundaries of districts affecting two or more municipalities, unless a majority of each group favored the change. This was a definite restriction and in direct contradiction to Dick's suggestion.[16]

The provision for filing of the orders relating to formation or alteration of districts was expanded. No new districts could be formed having an assessed valuation of less than $75,000.

The legislature of 1929 passed Joint Resolution Number 108, S. which created an Interim Committee on Education to study the educational system in Wisconsin and make suggestions for its improvement. The committee made a comprehensive study of the whole educational system and presented its findings and recommendations to the 1931 legislature.

The report was a plan for reorganizing the whole system of education.[17] The county was designated as the best unit of administration. To provide for better administration, the electors were to select a county board of education empowered to appoint a county superintendent of schools without consideration of residence requirements; to consolidate and/or reorganize school districts in the county, and to encourage efficiency of schools and reduce costs; and to administer elementary and secondary education in all of the county, all of which should be in some high school district. The committee felt that consolidation was hopeless on a voluntary basis and that a county board of education with the suggested powers would make consolidating more effective and yet be close enough to the people to be acceptable. The following reasons were given for recommending a county system of educational administration:

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[9] *Ibid.*, p. 30.
[10] *Ibid.*, p. 33.
[11] *Ibid.*, p. 33.
[12] State of Wisconsin, Biennial Report, Department of Public Instruction, Madison, Wisconsin, 1918, pp. 75-81.
[13] State of Wisconsin, Biennial Report, Department of Public Instruction, Madison, Wisconsin, 1920, pp. 106-108.
[14] State of Wisconsin, Biennial Report, Department of Public Instruction, Madison, Wisconsin, 1922, pp. 133-138.
[15] Koyen, *Op. Cit.*, pp. 35-36.
[16] *Ibid.*, p. 36.
[17] Wisconsin Interim Legislative Committee on Education, *A Plan for Reorganizing Wisconsin's System of Education*, 1931. Chapter 2, "A County System of Schools."

1. The county is better situated than the small district to meet present day needs and problems, both social and economic.
2. It would equalize educational opportunities.
3. It would equalize the tax burden.
4. It would provide better business and professional administration.
5. It would eliminate or consolidate the small schools and so save money and provide better education.

The report was carefully worded but not too positive. It lacked provision for increased state aid and overlooked federal aid. However, the legislature turned it down and ignored its recommendations.

In 1939, just 100 years after the first general law affecting school district organization, the legislature gave the state superintendent some discretionary power to reorganize. Municipal boards could still create or alter districts. But they could create no district with an assessed valuation of less than $150,000 nor make changes in districts that would result in claims for additional state aid without the approval of the state superintendent. The state superintendent was also authorized on his own motion, by order, to attach districts with valuation of less than $100,000 to contiguous districts.[18]

This law heralded a definite program of school district reorganization. The superintendent studied conditions in the counties where reorganization seemed to promise better educational opportunities and monetary savings. Elimination of smaller districts and development of county surveys aroused considerable public interest.

Financial saving is stressed in State Superintendent John Callahan's biennial report for 1940-1942,[19] but he made no mention of the educational advantages provided.

The 1947 legislature provided for a study of the whole educational system in Wisconsin. This act[20] authorized a legislative commission to employ such professional, research, and clerical assistants as it deemed necessary, to hold meetings when and where deemed advisable, and to subpoena witnesses and compel production of books, records, or documents which it felt were needed in its investigations.

This Commission was to provide information and recommendations based on a two-year study. The legislature recognized the need for immediate changes in school district organization to provide equal educational opportunities, financed by equalized taxation. A new section[21] authorized school committees to create, alter, dissolve, or attach districts. It was a less arbitrary power than the superintendent had exercised under the law of 1939. Rural people, who felt that the local school districts belonged to them, were not anxious to delegate such extensive powers to a group which they feared might not have their best interests at heart. To help make the county committees acceptable, the 1947 law provided that half of the six-member committees were to be residents of the towns of the county.

The power which the state superintendent had exercised under the law of 1939 was reduced to that of advising and consulting with the county school committees, while the power of municipal boards to create alter or consolidate school districts remained in force.

The law of 1947 also made provision for increased aids for transportation for both elementary and high school districts. Aids were eliminated to districts which had suspended their schools, except where they could not obtain qualified teachers or where buildings had been destroyed. The maximum amount of high school tuition permissible was increased, and the limitation on the mill rate was changed from the local assessed valuation to the equalized evaluation.

The whole law was experimental and subject to change in the light of study and investigation by the Commission on Improvement of the Educational System. The following section reveals this situation: "This act is emergency legislation and all of its provisions shall expire June 30, 1949."[22]

The Commission made an exhaustive study and reported its findings and recommendations as prescribed by law.

In the general objectives,[23] emphasis was given to (1) equalization of educational opportunity, (2) equalization of educational costs, and (3) constant evaluation of the efficiency of the program, as well as continuous improvement in amount and quality of education provided. As a means of improving the possibility of attaining these objectives through the reorganization of school districts, the following recommendations are pertinent:

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[18] Koyen, Op. Cit., p. 43.

[19] State of Wisconsin, *Thirtieth Biennial Report of the Superintendent of Public Instruction, 1940-42*, Madison, Wisconsin, Department of Public Instruction, 1942, pp. 33-35.

[20] Wisconsin *Session Laws*, Chapter 573, 1947.

[21] Koyen, Op. Cit., pp. 47-50.

[22] Wisconsin *Session Laws*, Chapter 573, 1947, p. 19.

[23] Report of the Commission, Part One, 1949, p. 6.

1. All authority now resting with the State Superintendent of Public Instruction to reorganize or consolidate school districts should be repealed.
2. All authority of the town boards to reorganize or consolidate school districts should be repealed.
3. The county school committees should be required to file a master plan with the State Department of Public Instruction by January, 1951. This plan should provide for a comprehensive program of education with administrative units covering grades from kindergarten or first grade through the twelfth grade, which can be a pattern for future development.
4. The county committee should have authority to approve transportation plans.
5. The county committee should be the policy making body for educational purposes for the county, with authority to select the County Superintendent of Schools.
6. All parts of the state should be within an operating administrative district for both elementary and secondary education.
7. Aids should be withheld from non-conforming districts or areas.

Many other recommendations were made and the above were elaborated and refined. Some of them were incorporated in the law of 1949, while others were not.

The Commission's recommendation to repeal all authority of the town boards, village boards, and city councils to reorganize or consolidate school districts, and all other sections pertaining thereto, was disregarded.

To meet the criticism that the county committees were given excessive and arbitrary powers, provisions were made to insure an opportunity for anyone interested to know what sort of reorganization was being planned and to protest against it if so inclined.

There was provision for protest against any changing of school districts by county school committees during the two-year trial period. Local autonomy of rural people was further assured by providing for the initiating of a referendum by either farm or village electors and the requirement of a majority vote by both areas involved in the reorganization.[27]

Progress in school reorganization can be appraised in several ways. Superintendent Callahan's report of 1948[28] included several. Among them were these:

"The most encouraging feature of reorganization in 1948 has been the large number of community-centered districts created."

"In some instances these districts were not sufficiently large to provide the type of educational program desired."

"The strengthening of one-teacher districts by the attachment of more territory has been common throughout the state and has been emphasized particularly in a few counties."

"On the whole the program has been encouraging. The direction, on the whole, is good. The results appear most satisfactory where districts are now operating."

Forty-two new districts are enumerated.

The evaluation seems to be mostly in terms of the number of districts created and a subjective evaluation, insofar as it is given, of the results. The standards suggested in laws and professional literature seem to have been ignored in the evaluation of accomplishments.

In the 1949-50 school year, Burton W. Kreitlow used the "desirable characteristics of a good school district" and "suggested standards for district reorganization" listed in the "Guide for County School Committees,"[29] as a basis on which to begin measuring progress in district reorganization in Wisconsin. The following characteristics were used as criteria in his report:

1. A district should have at least 800-1000 pupils between the ages 6-18.
2. Each elementary school should bring together enough pupils so that children may attend a class of their own age group.
3. There should be approximately 300 students in each high school.
4. No child in grades 1-6 should ride more than 40 minutes one way on the bus.
5. No high school student should ride a bus over 60 minutes one way.
6. There should be a staff of at least 12 teachers in each high school.
7. School buildings should be large enough to provide adequate accommodations for the educational offerings. Future building needs should not be overlooked.
8. The school district should comprise an area in which the people have common ideals, centers of interests, similar modes of living, and in which they depend upon one another for their general welfare.
9. A satisfactory district should have sufficient valuation to support a modern educational program and have a single board of education

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[27] Wisconsin Session Laws, Chapter 501, 1949, p. 7.

[28] A Guide for County School Committees, State Superintendent of Schools, State Department of Public Instruction, Madison, Wisconsin, 1949, p. 22.

[29] Ibid., p. 2.

elected by all the people living in the area served by the school. (In relation to 800-1000 pupils between the ages of 6-18, a sufficient valuation would be no less than $8,000,000.)

10. The overall program should provide educational opportunities for post high school students and adults.[27]

The districts met the recommended standards as follows:

1. In 1949-1950 of the 37 new districts in operation, three had the suggested 800-1000 pupils between the ages of 6 and 18. Twelve had less than half that many.
2. Relative to the second criterion, 22 districts operated elementary schools with only one or two teachers per school. There seemed to have been little change the first year of reorganization to insure meeting this criterion.
3. One high school met the third criterion of 300 students. Fourteen had less than half that number, while 24 had less than 200 students.
4. and 5. At least some of the elementary schools exceeded the maximum time suggested for riding to and from school. In the case of high schools, many of them reached or exceeded the maximum time suggested for bus rides to and from school. Not more than half of the schools were providing transportation within the recommended time limits.
6. and 7. Only four high schools had the required twelve teachers.
8. In view of the small enrollments of many schools, it is doubtful if the districts met the requirements of a community as defined by sociologists.[28] In spite of this fact many were reported as being coextensive with the community.
9. In terms of a satisfactory tax base, only four districts met the suggested minimum of $8,000,000 and 13 did not even reach the half-way mark.
10. Fourteen of the districts had no adult education programs of any kind, while those of the remaining schools were so restricted as to fail meeting the recommendation of an over-all program.

Kreitlow summarized, "We have no newly reorganized areas that meet all of the standards, and but four we might look to as districts approaching the attainment of these standards."[29]

Research

Changes in school districts were charted in significant national surveys by both the National Education Association (NEA) and the Office of Education. Gaumnitz[30] used a careful survey to obtain rural school statistics. One of the most important statistics was the number of local administrative units. The base of identification was the rural county and the counties were stratified on the basis of criteria developed from the 1950 census. These counties were then stratified on the basis of percentage of rural residence. The American Association of School Administrators[31] enumerated types of local administrative units noting the history of their development, variations in their financial abilities, and certain legal classifications and designations in the literature.

A number of reports were produced in Midwestern states where school reorganization was the most critical. McGhehey[32] summarized the trends in Indiana from 1932 to 1957 and compared them with trends in other Midwestern states. Barr and others[33] gathered detailed information on all of the consolidated school corporations in Indiana and reported their status as of August, 1959. Domian and Keller[34] reported to the Kansas Legislative Council on elementary and secondary schools in Kansas. They stressed the number, evaluation, population, levies, size, expenditure, socio-economic level and growth patterns in the state. Domian and Keller summarized the findings and opinions of citizens' school committees in 105 counties and made specific recommendations for school size, finance and type of district. They recommended large-scale reorganization with minimums of 1,200 pupils.

Noble and Dawson[35] summarized basic data relating to rural education and its social and economic backgrounds. Keppel[36] reported on the reform movement in rural education prior to 1914. She listed early rural leaders concerned largely with curriculum improvement and reviewed their ideas, which were later used as a base for better organization of districts.

The most significant studies of local attendance units are coming out of the Catskill area project in Small School Design. The first publication[57] outlined (1) internal organization of small schools serving small groups, (2) developments in multiple classes under the direction of a single teacher, and (3) the use of school aids, visual aids and shared services for talented youth. The second Catskill project[58] enumerated what school aids accomplish. The third report[59] described multiple classes and the needs which they met and discussed how certain space problems were resolved. The fourth[60] described shared services among small local administrative units. The total project encompasses 25 school districts in New York's upper Catskill Mountain region working together on a number of programs involving small classes. District sizes vary from 219 to 1,100 students. Each school decides whether it will share services. The program emphasizes educational opportunities.

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[27] Burton W. Kreitlow, "Wisconsin's Newly Reorganized School Districts," University of Wisconsin, Madison, Wisconsin, Unpublished Manuscript, 1950, p. 1.

[28] J. F. Thaden, "What is a Good Community?", *Youth Leaders Digest*, 12:327, March 1950. (A Community Center must possess six required services, i.e., a doctor, dentist, newspaper, movie theater, bank, and an accredited high school.)

[29] Kreitlow, Op. Cit., p. 6.

[30] Walter H. Gaumnitz, *Statistics of Rural Schools, a U. S. Summary, 1955-56*, U. S. Department of Health, Education and Welfare, Office of Education, Circular No. 565, Washington, D. C.: Superintendent of Documents, Government Printing Office, May, 1959, p. 1-12.

[31] National Education Association, American Association of School Administrators, *School District Reorganization*, Report of the A.A.S.A. Commission on School District Reorganization, Washington, D. C.: The Association, 1958, p. 323.

[32] Marion A. McGhehey, "School District Reorganization in Indiana," *Teachers College Journal*, 29:86-90; May, 1958.

[33] W. Monfort Barr, and others, "School District Reorganization in Indiana," *Bulletin of the School of Education*, Vol. 35, No. 6, Bloomington: Indiana University, November, 1959.

[34] Otto E. Domian and Robert J. Keller, *Comprehensive Educational Survey in Kansas*, Topeka: Kansas Legislative Council, 1960, Vol. 1 and 2, p. 281.

[35] M. C. S. Noble and Howard A. Dawson, *Handbook on Rural Education*, Washington, D. C.: Department of Rural Education, National Education Association, 1961, p. 166.

[36] Anne Marie Keppel, *Country Schools for Country Children: Backgrounds of the Reform Movement in Rural Elementary Education, 1890-1914*, Doctor's Thesis, Madison: University of Wisconsin, 1960, 339 p. Abstract: Dissertation Abstracts, Vol. 21: 1448-1449, No. 6, December, 1960.

The U. S. Office of Education, through its comprehensive statistical summaries of state school systems and local districts, provides much of the basic data. The survey procedure for rural county school systems was revised to coincide more realistically with summaries of city school systems. The indexes of educational conditions identified in these reports consisted chiefly of averages, ratios, and percentages; and as is recognized in the report, these statistics may hide many significant facts. From these reports, Roesch[61] identified trends and research problems relating to school district organization. Gaumnitz[62] reported on data gathered directly from superintendents of schools of counties selected to fit the criteria of ruralness mentioned previously. His report on the 101 most rural counties met these two basic tests: 100 per cent rural according to census reports and 30 per cent or more of the total population living on farms. He pointed out that 78 of the 101 extremely rural counties were located in the southern and plain states and the 101 selected counties contained 32,778 school districts. The U. S. Department of Commerce[63] reported that there were 42,429 school systems in 1960, a decrease of 20 per cent in a two-year period. It was concluded that reorganization laws facilitating annexation and consolidation have led to a two-thirds decline in numbers of school districts since 1942. Gaumnitz[64] reported on a comparison of two major types of school district organization and indicated that the number of enlarged county-unit type of school district is growing and is spreading to more states. Dawson and Isenberg[65] summarized available data from public documents to show that the number of districts employing nine or fewer teachers was declining sharply and the number of districts employing forty or more teachers was gradually increasing. Dawson[66] argued for reorganization because of the teacher shortage, small district financial problems, and inadequate curriculum.

In addition to the many excellent summaries on a national basis, Midwestern concern with trends in district organization, county by county, has resulted in reports by Barr and others,[67] Huys,[68] The Missouri State Department of Public Instruction,[69] and Schultz.[70]

School reorganization is directly affected by financial, political, legal, and sociological factors. Research in these areas is limited with most practical value coming recently.

An American Association of School Administrators[71] publication devoted an entire chapter to school finance policies as they related to school district reorganization. The different kinds of state aids and their influence were identified and research related to finance in previous years was summarized. The chapter associated financial efficiency with the larger district organization, observing that small districts in rich agriculture areas with few children to support have certain tax advantages which negate educational reasons for reorganization. It concluded that financial purposes of reorganization — economical administration, equitable distribution of revenues, and equalized local tax burdens — are important factors.

Chisholm[72] reported that some economic plans discourage district reorganization. He summarized other studies and analyzed 15 state financial plans. He concluded that existing school finance programs retard reorganization more than they encourage it.

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[57] Catskill Area Project in Small School Design, *Catskill Area Project in Small School Design*, Oneonta, New York: The Project, 1959, pp. 1-24.

[58] Catskill Area Project in Small School Design, *School Aids at Work*, Oneonta, New York: The Project, 1959, pp. 1-24.

[59] Catskill Area Project in Small School Design, *Sharing Educational Services*, Oneonta, New York: The Project, 1960, pp. 1-20.

[60] Catskill Area Project in Small School Design, *Multiple Classes Learning in Small Groups*, Oneonta, New York: The Project, 1961, pp. 1-32.

[61] Winston C. Roesch, "Selected Areas for Research in School District Reorganization," *Phi Delta Kappan*, 40:328-330, May, 1959, p. 328-330.

[62] Walter H. Gaumnitz, *Statistics of Public School Systems in 101 of the Most Rural Counties 1951-52*, U. S. Department of Health, Education and Welfare, Office of Education, Circular No. 426, Washington, D. C.: Superintendent of Documents, Government Printing Office, 1955, pp. 1-18.

[63] U. S. Department of Commerce, *State and Local Government Special Studies*, Washington, D. C.: Superintendent of Documents, Government Printing Office, November, 1960, No. 44, "Public School Systems in 1960," p. 21.

[64] Walter H. Gaumnitz, *Small Schools are Growing Larger*, U. S. Department of Health, Education and Welfare, Office of Education, Circular No. 601, Washington, D. C.: Superintendent of Documents, Government Printing Office, September, 1959, pp. 1-13.

[65] Howard A. Dawson and Robert M. Isenberg, "Status Report on School District Reorganization," *School Executive* 78:73-74, February, 1959.

[66] Howard A. Dawson, "A Current Look at School District Reorganization in the United States," *Teachers College Journal*, 29:83-86, May, 1958.

[67] Barr and others, Loc. Cit., pp. 6-7.

[68] George J. Huys, *The Legal Aspects of School District Reorganization in Indiana*, Doctor's Thesis, Bloomington, Indiana: Indiana University, 1958, p. 283.

[69] Missouri State Department of Public Instruction, *The Trend of One-Teacher Schools in Missouri*, Jefferson City: The Department, May 20, 1960, (offset), p. 6.

[70] John G. Schultz, *A Progress Report on School District Reorganization, State of Iowa, March, 1961*, Des Moines: Department of Public Instruction, pp. 3-4.

[71] National Education Association, Loc. Cit., p. 207-243.

[72] Leslie L. Chisholm, "State Finance Programs Handicap Reorganization," *Nation's Schools*, April, 1959, Vol. 63, No. 4, p. 77-78.

A cost study of rural high schools in Kansas was reported by Wright and Pine.[53] The analysis was limited to the costs of instruction and of plant operation in rural high schools in central Kansas for 1956 and 1957. The studies related specifically to breadth of curriculum offerings, teacher-pupil ratio, cost of instruction, and district valuation. This report verified the inverse relationship between the number of students in the district and cost per pupil. It also revealed a direct relationship between reorganization and greater educational opportunity.

Roesch[54] summarized administrative and specialized service staffing in local school districts. Barr and others[55] reported extensively on legal aspects of school district reorganization in Indiana, summarizing both the legislation and the various legal tests of such laws. They concluded that no single piece of legislation is likely to solve the organization problems in Indiana. Swalls[56] described two popular laws in Indiana responsible for 90 per cent of its reorganization.

Bunger[57] related the size of high school and its rural-urban character to academic success in college. With the Guttman scalogram formula he developed a continuum from rural to urban communities. Craver[58] reported on different methods of delineating boundary lines of the sociological secondary trade community in a broad-scale, large-area school district reorganization program. He used the fringe survey method, the formula method, the trade-center interview method, and the pupil questionnaire method. Relating present data to early history, Craver concluded that the basic considerations inherent in the colonial school districts are also essential today. These factors are sociological: a cohesive, self-sufficient community, curriculum and services, accessibility of the school, equitable tax base, and economy of human and economic resources. He concluded that the fringe area survey method was most reliable in locating sociological trade area community boundary lines. Gee[59] reported that the farm population still lags significantly behind non-farm population in educational achievement.

Two comprehensive studies on resistance to or acceptance of school reorganization were recently completed. Blikre[60] identified positive and negative factors related to successful and unsuccessful reorganization proposals in North Dakota. Sayres[61] explained the resistance to centralization in New York. He studied 100 communities where centralization campaigns had occurred. Three factors most responsible for resistance were concern with increased cost, prospective loss of control, and transportation. In Sayres' study, finances aroused resistance 78 times, political and legal reasons, 93 times, and sociological reasons, 178 times. He reported an $r = +.72$ correlation between the number of reasons against reorganization identified in the community and the number of "no" votes on a bond issued for buildings.

Minnesota Education Association[62] found limited instructional programs in small high schools. This study was undertaken by a committee on the Intermediate Unit of School Administration. It showed that, in spite of extensive reorganization of school districts, Minnesota schools were still too small to meet even minimum criteria. The Indiana School Boards' Association[63] made a check of course offerings in order to rate curriculum opportunities and a second check to measure quality. Barr and others[64] reviewed previous reorganization studies of educational opportunities and related the findings to the disadvantages of the small township high school in Indiana. Pound and Young[65] reviewed studies published prior to 1956 and concluded that increased educational opportunities did result from reorganized school districts.

Tracy[66] reported the effects of reorganization in Jefferson County, Colorado, where 42 districts were formed into one district. The situation in 1956-57 was compared with the situation in 1947-48. Tracy concluded that reorganization increased educational opportunity during this period. However, Jefferson County had a rapidly growing population, and its school population doubled during the period; conclusions, thus, were tentative. No control was used in the study. Barrett[67] reported advantages derived from the multiple-teacher departments resulting from school consolidation.

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[53] Willard A. Wright and Wilfred H. Pine, *Costs of Rural High Schools in Central Kansas, 1956-57.* Agricultural Experiment Station, Bulletin 430. Manhattan: Kansas State University, February, 1961. pp. 1-3.

[54] Winston L. Roesch, *Statutory Basis for Administrative and Specialized Service Staffing in Local School Districts.* U. S. Department of Health, Education and Welfare, Office of Education, Bulletin 1960, No. 1. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1960. p. [illegible].

[55] Barr and others, Op. Cit., pp. 63-78.

[56] Fred Swalls, "Two Popular Indiana School District Reorganization Laws," *Teachers College Journal,* 29:[illegible], May, 1958.

[57] Fred Acton Bunger, *Cultural Forces and Academic Success in College Freshmen.* Bulletin of the Bureau of School Service, Vol. 33, No. 1. Lexington: University of Kentucky, September, 1960. pp. 63-66.

[58] Daniel Troy Craver, *School District Reorganization: Feasibility of Methods for Locating Boundary Lines of Sociological Trade Area Communities.* Doctor's Thesis. Austin, Texas: University of Texas, 1959. p. 226. Abstract: Dissertation Abstracts, Vol. 20, 2604, No. 7, January, 1960.

[59] Wilson Gee, "The Farmer Lags in Educational Attainment," *School Life,* 42, September, 1960, pp. 24-27.

[60] Clair T. Blikre, *The Positive and Negative Factors Involved in Successful and Unsuccessful School District Reorganization Proposals in North Dakota.* Doctor's Thesis. Grand Forks, North Dakota: University of North Dakota, 1960. p. [illegible].

[61] William C. Sayres, *Recurring Reasons for Resistance to Centralization.* Albany, N. Y.: The State Education Department, April, 1960. pp. 15-17.

[62] Minnesota Education Association, *Improving the Administrative Structure to Secure Better Educational Services for Minnesota Children.* St. Paul: The Association, 1960. pp. 31-60.

[63] Indiana School Boards Association, *Setting Our Sights for Adequate School District Organization.* Bloomington, Indiana: The Association, January, 1960. pp. 6-8.

[64] Barr and others, Op. Cit., pp. 5-16.

[65] Clarence A. Pound and John F. Young, "Reorganizing School Districts Provide Increased Educational Opportunities," *Teachers College Journal,* 29:94-96, May, 1958.

[66] Noel H. Tracy, *Educational Changes Accompanying Reorganization in Jefferson County, Colorado.* Doctor's Thesis. University of Colorado, [illegible]. Abstract: *Dissertation Abstracts,* Vol. 19:2522-2523, No. 10, April, 1959.

[67] David C. Barrett, "Multiple Teacher Department," *Agricultural Education Magazine,* 32, 93-94, October, 1959.

In 1956 Eisemann[68] studied the relationship of school district reorganization to: (1) educational opportunities; (2) academic achievement; (3) educational costs; and (4) community and neighborhood social structures and processes. He found more educational opportunities provided for first and sixth grade students in reorganized districts than in non-reorganized districts. This was especially true of physical facilities, specialized personnel, wider variety of curricular and co-curricular activities.

Eisemann stressed the role of school district organization in the higher educational achievement among the reorganized school districts at the sixth grade.

He also found no vital relationship between a strong identification with community and village trade and service facilities and a recognized and accepted community school district.

Hieronymus[69] used results of the Iowa Basic Skills Testing Program, given to all students in public schools located in cities of 10,000 population or under. These tests were given in 1948 in 1,005 school systems to 71,000 sixth, seventh, and eighth grade students. He divided the schools into six classifications based on criteria for an adequate school district. He found that the greatest difference in achievement usually occurred between schools with multiple grade teacher load and single grade load. The data suggest that a teacher for each grade induces high achievement in the basic skills. Hieronymus reported little difference among schools with full, partial, and no departmentalization. His findings agreed with previous research.

These findings coincided with those of Feldt[70] who revealed advantages at both the ninth grade and the twelfth grade for youngsters in high schools of 201 or more students in 1959. Tests in large and small schools between 1948 and 1955 had produced similar results. Feldt implied that the Iowan who receives his elementary education in a rural school and a secondary education in a small high school of 100 or fewer students suffers educational double jeopardy. He suggested, further, that during the high school years, a student's disadvantages may increase. Apparently, Feldt didn't test this hypothesis, although it should be.

Vincent[71] devised an analysis of a school system and developed a 14-criteria profile to rate program quality.

Bunger[72] reported achievement of college freshmen coming from different sized high schools. Working with a number of factors in addition to school size, he identified "positive concentration" and "negative concentration." Basically, Bunger studied school-community background, not students. And his relationship wasn't one-to-one between backgrounds and test scores. Actually, he related backgrounds to test scores as predictors of probation status at college. The methodology and statistical procedures were developed in a sophisticated fashion and the models are presented clearly. The number of courses offered in high schools was related to achievement in college.

Lathrup[73] also studied college achievement, reporting on academic grades of students in Iowa State College in relation to size of high school and courses offered in the high school. He found a positive relationship between size of high school and academic grades only in the first year of college.

Kreitlow[74, 75] reported that boys and girls in reorganized districts had a higher academic achievement than those in non-reorganized districts. However academic achievement among first graders was higher in non-reorganized districts.

Rice[76] compared pupil behavior patterns between 332 students attending one reorganized high school and 472 students attending five small township high schools. All of the schools were in the same county. Rice proposed the null hypothesis of no difference between the mean frequence scores on the FRA Youth Inventory. A "t" test was used to determine differences. The results were mixed and the hypothesis accepted. The potential error in comparing students in one large school with students in five small schools is so great the results are inconclusive.

Fredenthal[77] reported that if all of California's school districts were unified, 3 per cent of the cost of the foundation program would be shifted from state to local funds.

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[68] Carl Eisemann, *A Restudy of The School Districts in Two Rural Communities to Determine the Effects of Reorganization*, Doctor's Thesis, University of Wisconsin, Madison, Wisconsin, 1956.

[69] A. N. Hieronymus, *Achievement in the Basic Skills as Related to Size of School and Type of Organization*, Monograph, School of Education, Iowa City: State University of Iowa, 1949, p. 8.

[70] Leonard S. Feldt, *Relationship Between Pupil Achievement and High School Size*, Monograph, School of Education, Iowa City: State University of Iowa, 1960, p. 8.

[71] William S. Vincent, *Quality Control: A Rationale for Analysis of a School System*, IAR — Research Bulletin, Vol. 1, No. 2, New York: Teacher's College, Columbia University, January, 1961, pp. 1-7.

[72] Bunger, Op. Cit., pp. 83-90.

[73] Irving Lathrop, "Scholastic Achievement at Iowa State College Associated with High School Size and Course Pattern," *Journal of Experimental Education*, 29:37-48, September, 1960.

[74] Burton W. Kreitlow, "Preliminary Report on School Reorganization Study — Effects of School Size," *Wisconsin Journal of Education*, 91: No. 8, 17-18, March, 1959.

[75] Burton W. Kreitlow, "School District Reorganization, Does it Make a Difference in the Education of Your Child?" *Agricultural Experiment Station Special Bulletin No. 6*, Madison: University of Wisconsin, p. 3, March, 1961.

[76] David Rice, *A Comparative Study of the Personal Adjustment of High School Students Attending a Reorganized Rural School with High School Students Attending Selected Rural Township Schools*, Doctor's Thesis, Lafayette: Purdue University, 1958, p. 157, Abstract: Dissertation Abstracts: Vol. 19:2005, No. 8, February, 1959.

[77] Daniel K. Freudenthal, *Relationships Between Local School District Unification in California and the Financial Support of Public Education*, Doctor's Thesis, Los Angeles: University of California, 1959, p. 186.

Carpenter[illegible] examined the relationship of reorganization to junior or community college programs. He attempted to determine when a school district was large enough to support a junior or community college. His criteria have not been tested.

Rose[illegible] reported on a non-controlled analysis of Goshen, Arkansas, after it consolidated with Fayetteville and organized a rural community improvement organization. He concluded that this organization replaced the school as the center of activity in the community.

Eisemann[illegible] and Russell[illegible] tested the hypothesis that had long been assumed in reorganization circles that when a community reorganized its open country elementary schools, the farmers' ties to the village center increased for social and economic services. In a survey of parents when youngsters were in first grade and of the same parents when youngsters were in the sixth grade, they found a slight increase in contacts with the village center in the reorganized communities, but found an equivalent increase in ties to the village center in the non-reorganized or control communities.

There has been very little research on the effect of reorganization on administration of schools. Farr[illegible] made a case study of one citizens' council in its attempts to implement district reorganization. And Crawford[illegible] identified some of the administrative problems encountered in reorganized districts.

Shipla[illegible] reported that, in general, there was more and better supervision of teachers in reorganized districts than in non-reorganized districts. He found more group and individual conferences, more classroom observations, more written and oral reports to teachers, and greater recognition of instructional problems in reorganized school communities. Finding greater association between teachers and supervisors, Shipla assumed that supervisors were helping teachers to improve instruction and promote greater pupil growth — the primary purpose of our educational system.

Four factors must be considered in judging a supervisory program: philosophy, principles, personnel, and certain characteristics of situations. Fewer differences appeared when these factors were analyzed.

Evidence showed greater consensus on school problems among teachers and supervisors in reorganized school communities than in non-reorganized communities. Beliefs affect decisions. If teachers and supervisors value the same educational items, a better educational program should result.

Shipla found that supervision in reorganized school communities was more democratic than in non-reorganized communities. Teachers in reorganized communities got more help and received greater respect; they also did more planning in the supervisory program.

Furthermore, teachers had greater access to professional literature in reorganized school communities. If teachers are to "grow" professionally (supervision is often described as fostering teacher growth), access to professional literature provides one step.

Reorganized school communities also had more supervisors, and these supervisors spent more time helping new teachers than they did in helping those not in new positions. This was not true in non-reorganized school communities.

More supervisory factors investigated showed no difference between reorganized school communities and non-reorganized school communities than factors which did show a difference. However, many important factors did show significant differences.

[illegible] W. W. Carpenter, "Planning Satisfactory Local Administrative Districts," *Junior College Journal*, [illegible], No. 1, September, [illegible].

[illegible] Carl E. Rose, "The Morale of Rural America," *Agricultural Leaders Digest*, [illegible], May, [illegible].

[illegible] Eisemann, Op. Cit., pp. [illegible].

[illegible] Russell, Op. Cit., pp. [illegible].

[illegible] Robert C. Farr, "The Role of the Citizens Council in School District Reorganization," *Teachers College Journal*, [illegible], May, [illegible].

[illegible] Edwin E. Crawford, "Problems in the Administration of the Reorganized School District," *Teachers College Journal*, [illegible], May, [illegible].

[illegible] Orin J. Shipla, *Study of Certain Supervisory Practices in the Schools of Ten Wisconsin Communities*, Doctor's Thesis, University of Wisconsin, Madison, Wisconsin, [illegible].

Chapter III: Design and Methodology

Design

Sample

THE BASIC DESIGN for this research project is pictured in Figure 1 and entails a comparison between communities with the traditional school district organization and districts which have been reorganized. Between 1949 to 1951, five pairs of communities were selected and all first grade children in these communities during the first year of the study made up the sample group. Sample groups are represented in Figure 1 by A, B, and C. The youngsters in the sample, their school, their teachers, and parents were studied comprehensively when the youngsters were in grades one, six, and nine. They will be studied further in the twelfth grade and five years after they graduate from high school.

A replication started five years after the initial study began. The replication involves the same communities as did the initial study and is represented in Figure 1 by A', B', and C'. Replication measures the effectiveness of school district reorganization for a second sample group, one group starting school during the first year of a community's reorganization and a second, starting five years after the initial reorganization was accomplished. In addition, it should facilitate intra-community comparisons.

Ten Wisconsin communities, five with a reorganized school district structure and five with a traditional school district structure, were selected for the sample. Each reorganized community was matched with a non-reorganized (control) community and the first grade students in both types of school communities were studied the year that their community was selected for the study. In the original group the study started with 700 first grade children and the replication group started with 881 first graders.

In selecting school communities for the sample, a community with a reorganized district was selected first and then was paired with a non-reorganized community. The sample was selected from districts that had reorganized during the preceding year.

Selection was based on criteria outlined by Kreitlow.[1] For example, in 1949, the year that the project began, the reorganized community was selected from among 37 newly reorganized districts. Only 4 of the 37 districts approached the standard of good organization. The criteria used are listed on page 6. In order to represent the total pattern of reorganization in Wisconsin, selection also had to include districts that didn't meet the criteria. Thus, two of the reorganized communities selected met only a few of the criteria for effective reorganization, one met about half of these criteria and two were selected because they most nearly represented the "ideal" reorganization as was spelled out by the criteria.

After a reorganized community (or communities) had been selected, it was paired with a community having a traditional multi-district administrative organization. The non-reorganized communities were matched with the reorganized communities on the basis of wealth, population size and distribution, topography, type of farming, nearness to cities and industries, type and distribution of roads and highways, distribution between farm and village residence, and area and enrollment of the districts. The sample included the wooded area of northern Wisconsin, the rich agricultural area of the central and southwestern part of the state, and the developing commuting area in the heavily populated and industrialized lake shore in Milwaukee, Racine, and Kenosha counties. It is believed that these communities possessed features typical of rural school districts, not only in Wisconsin, but of those throughout the Midwest.

Figure 2 shows the location of each of the communities in Wisconsin. Table I indicates the comparability of the selected reorganized and non-reorganized communities on certain factors used in matching the communities. The total equalized evaluation for tax purposes for each child in the reorganized and non-reorganized communities is very similar — $12,097 and $11,795 respectively.

The sample is designed so that the non-reorganized school communities serve as the control with which to compare the effectiveness of the educational programs in the reorganized school communities. Previous investigations of reorganized school districts had not used controls. All four major hypotheses are constructed on this matched community control.

The five communities represent various degrees of reorganization, ranging from the entire high school attendance area to as little as one-half of the

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[1] Kreitlow, Op. Cit., p. 3.

Year	School Grade 1	6	9	12	(5 years Post H. S.)	Community Pairs (R-NR)
1949-50	A					Winneconne-Denmark
1950-51	B					Kendall-Cazenovia; Blue River-Wauzeka
1951-52	C					Port Wing-Gilman; East Troy-Waterford
1952-53						
1953-54						
1954-55	A'	A				Winneconne-Denmark
1955-56	B'	B				Kendall-Cazenovia; Blue River-Wauzeka
1956-57	C'	C				Port Wing-Gilman; East Troy-Waterford
1957-58			A			Winneconne-Denmark
1958-59			B			Kendall-Cazenovia; Blue River-Wauzeka
1959-60		A'	C			Winneconne-Denmark Port Wing-Gilman; East Troy-Waterford
1960-61		B'		A		Kendall-Cazenovia; Blue River-Wauzeka Winneconne-Denmark
1961-62		C'		B		Port Wing-Gilman; East Troy-Waterford Kendall-Cazenovia; Blue River-Wauzeka
1962-63			A'	C		Winneconne-Denmark Port Wing-Gilman; East Troy-Waterford
1963-64			B'			Kendall-Cazenovia; Blue River-Wauzeka
1964-65			C'			Port Wing-Gilman; East Troy-Waterford
1965-66				A'	A	Winneconne-Denmark
1966-67				B'	B	Kendall-Cazenovia; Blue River-Wauzeka
1967-68				C'	C	Port Wing-Gilman; East Troy-Waterford
1968-69						
1969-70						
1970-71					A'	Winneconne-Denmark
1971-72					B'	Kendall-Cazenovia; Blue River-Wauzeka
1972-73					C'	Port Wing-Gilman; East Troy-Waterford

Fig. 1. Research Design — Longitudinal Study of Newly Formed Centralized School Districts in Wisconsin

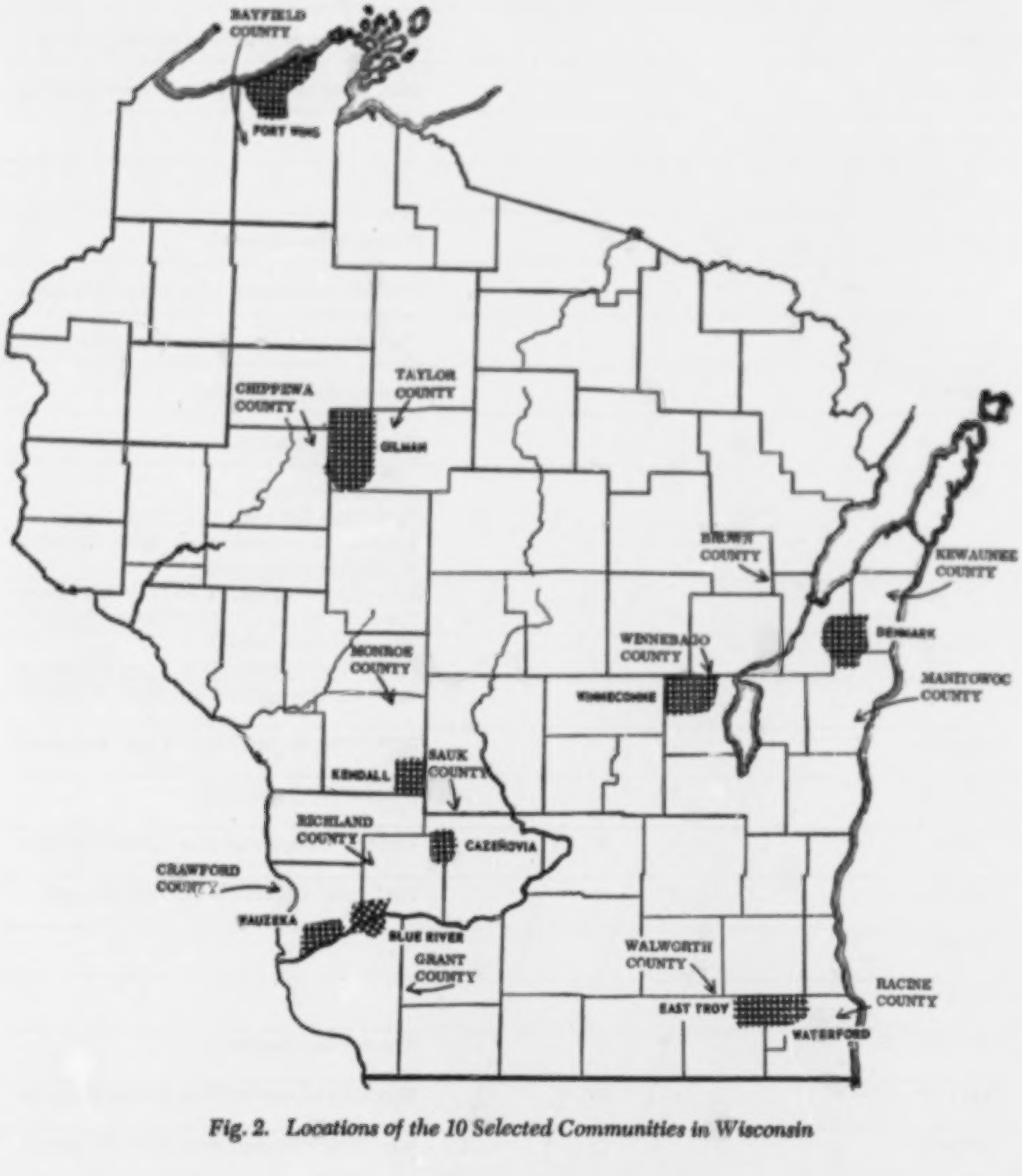
BAYFIELD COUNTY
PORT WING
CHIPPEWA COUNTY
TAYLOR COUNTY
GILMAN
BROWN COUNTY
KEWAUNEE COUNTY
DENMARK
WINNEBAGO COUNTY
WINNECONNE
MANITOWOC COUNTY
MONROE COUNTY
KENDALL
SAUK COUNTY
RICHLAND COUNTY
CAZENOVIA
CRAWFORD COUNTY
WAUZEKA
BLUE RIVER
GRANT COUNTY
WALWORTH COUNTY
EAST TROY
RACINE COUNTY
WATERFORD

Fig. 2. Locations of the 10 Selected Communities in Wisconsin

TABLE I.—Comparison of the Reorganized (Experimental) and Non-reorganized (Control) Communities on Selected Factors

PAIRS OF COMMUNITIES Reorganized	 Non-reorganized	1950 Village Population	Topography	Type of Farming	Equalized Evaluation (1950)	Miles from Village to Nearest City	Approximate Area (Square Miles)	School Age Children (1950)
Winneconne		1,078	Rolling and Marshy	Dairy	11,100,000	11	120	748
	Denmark	1,012	Rolling	Dairy	14,031,490	18	100	1,000
Blue River		425	River Valleys Hills	Dairy-Corn	4,800,100	14	100	410
	Wauzeka	564	River Valleys Hills	Dairy-Corn	3,115,600	16	100	305
Kendall		558	Hilly	Dairy	4,300,400	12	100	476
	Cazenovia	403	Hilly	Dairy	4,201,200	14	100	372
Port Wing		300	Rolling	Cutover	4,700,605	30	300	604
	Gilman	403	Rolling	Cutover-Dairy	7,261,508	30	300	900
East Troy		1,052	Gently Rolling	Dairy	16,021,900	23	140	1,040
	Waterford	1,100	Gently Rolling	Dairy	16,072,700	20	140	1,105

area. In all instances, the total high school attendance area was included in the study, but the reorganized part was analyzed separately. This permitted an analysis of differences between the reorganized and non-reorganized parts of the reorganized communities.

In a related cross-sectional investigation of the relationships between the factors of size, cost and achievement with reorganized school districts, Bragg[2] studied 39 reorganized school districts in rural Wisconsin. This study included all school districts reorganized between 1948 and 1951 except: (1) five districts included in the longitudinal study; (2) districts whose high school enrollment was made up of 15 per cent or greater non-resident or tuition enrollment; and (3) two districts for which the required information was not available. Data collected for these schools were categorized into three size groups as follows: (1) large — over 800, N = 9; (2) medium — 400 to 800 enrollment, N = 14; and (3) small — less than 400 enrollment, N = 16.

Hypotheses

Data collected for the basic research project are analyzed in terms of four null hypotheses:

> H_{o1} — There are no differences between reorganized and non-reorganized school communities in the educational opportunities available to the children.
>
> H_{o2} — There are no differences between reorganized and non-reorganized school communities in academic achievement and personal and social behavior of the children.
>
> H_{o3} — There are no differences between reorganized and non-reorganized school communities in educational expenditure. (Expenditure for educational purposes)
>
> H_{o4} — There are no differences between reorganized and non-reorganized school communities in the social and economic contacts of farmers with the village center.

To test these major hypotheses, each was stated in a series of sub-hypotheses. The study was designed so that valid conclusions from sub-hypotheses would contribute to conclusions based on the four major hypotheses. It should also be mentioned here that, during the period covered in this project, no new data pertaining to hypothesis 4 were analyzed.

The first major hypothesis (H_{o1}) was tested by analyzing data on the basis of the following sub-hypotheses:

> H_{1a} — There are no differences between reorganized and non-reorganized school communities in the availability of supplemental teaching aids and materials.
>
> H_{1b} — There are no differences between reorganized and non-reorganized school communities in professional qualifications of teachers, availability of, and participation in, in-service training, professional improvement through further study, etc.
>
> H_{1c} — There are no differences between reorganized and non-reorganized school communities in the amount of special assistance available for students.

To test the second major hypothesis (H_{o2}), the following sub-hypotheses were tested:

> H_{2a} — There are no differences between girls in the reorganized and non-reorganized school communities in total academic achievement.
>
> H_{2b} — There are no differences between boys in reorganized and non-reorganized school communities in total academic achievement.
>
> H_{2c} — There are no differences between girls in the reorganized and non-reorganized segments of the reorganized school communities in total academic achievement.

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[2] Desmond H. Bragg, *A Study of the Size-Cost-Achievement Relationships in the Reorganized School Districts of Wisconsin*, Doctor's Thesis, University of Wisconsin, Madison, Wisconsin, 1960.

H_{2d} — There are no differences between boys in the reorganized and non-reorganized segments of the reorganized school communities in total academic achievement.

H_{2e} — There are no differences between girls in reorganized and non-reorganized school communities in: 1) Reading achievement; 2) Mathematics achievement; 3) Science achievement.

H_{2f} — There are no differences between boys in reorganized and non-reorganized school communities in: 1) Reading achievement; 2) Mathematics achievement; 3) Science achievement.

H_{2g} — There are no differences in academic achievement among students in small, medium, and large enrollment reorganized school communities.

H_{2h} — There are no differences in academic achievement among farm students in small, medium, and large enrollment reorganized school communities when intelligence is controlled.

H_{2i} — There are no differences among the means of total scores of the California Test of Personality achieved by boys and girls in reorganized and non-reorganized school communities.

H_{2j} — There are no differences among means of scores on sections and total scores of the California Test of Personality achieved by boys and girls in reorganized and non-reorganized school communities when first grade socio-economic status, teacher ratings of social qualities and emotional stability are controlled.

The third listed major hypothesis (H_{o3}) was tested on the basis of the testing of two sub-hypotheses:

H_{3a} — There are no differences in instructional expenditures per unit of achievement between reorganized and non-reorganized school communities.

H_{3b} — There are no differences in academic achievement among farm students in high, medium, and low expenditure schools when intelligence is controlled.

The fourth listed major hypothesis (H_{o4}) is not subject to test at grade nine. The findings at the end of grade six reported by Eisemann[3] and Russell[4] will be compared to findings from an additional test of this hypothesis after all youngsters have completed grade twelve.

In Chapter IV (Analysis) the grade level to which the analysis pertains will be identified. In most instances, the analysis for H_{o1} is on sixth grade data, for H_{o2} on ninth grade data, and for H_{o3} on sixth grade data.

Methodology

Data Used

To solve the major hypotheses, appropriate data related to each sub-hypothesis were collected.

Examples of the data needed to test the hypothesis follow:

H_{o1} — Level of training of the teacher, availability of teacher in special subjects as art, music, and physical education, availability of minimum library facilities, availability of audio-visual equipment, and the amount of time the teacher spends with the individual child each day.

Other data used in testing this hypothesis included teacher's age and sex, educational qualifications, experience and salary, opportunities for in-service training, characteristics and amount of supervision available, and qualifications of administrators.

H_{o2} — achievement test scores in reading, arithmetic, English, social studies and science, level of intelligence, rating on interest inventories and rating on social and personal behavior inventories.

H_{o3} — actual cost of operation and maintenance were found in the financial reports of school districts filed in the State Department of Public Instruction.

H_{o4} — social-economic status scores of the families in the study (the Sewell Socio-Economic Status Scale was used), social economic service patterns of families in the study and amount of service provided by the village center to the farm service area.

Data Collecting Instruments

Data required for testing hypothesis 1 were collected by interview, questionnaire, observation, and review of school reports. Structured interviews were conducted with each first and sixth grade teacher in every school in the ten communities. Interviews were conducted by graduate assistants using an interview schedule as a guide. The interviewees also estimated in a questionnaire the time they spent with first or sixth grade and with individual pupils, and completed a check-list of their educational purposes and processes.

The *interview schedule* was constructed to help identify characteristics, qualifications, and opportunities for teachers as well as physical, curricular, and special help opportunities available to the pupils. The *questionnaire*, one page mimeographed, was designed to help each teacher (1) to rate her pupils and, (2) to ascertain the amount of time she spent with individual pupils and with the class being examined. The *Educational Purposes and Practices Check-list* was designed to ascertain educational philosophy and beliefs held by the teachers. This check-list also helped the investigator determine the extent to which in-service and graduate or advanced education related to such philosophies and beliefs. These three instruments were tested before being incorporated into the study.

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[3] Eisemann, Op. Cit., pp. 128, 133-135.

[4] Russell, Op. Cit., pp. 47-49.

The research instruments used to test hypothesis 2 and its various sub-hypotheses were: standardized test batteries, an interest inventory, a personal-social behavior inventory, and a teacher rating of each child in her first and/or sixth grade class on selected academic and background factors.

Standardized Tests

Three forms of the sixth edition and one form of the seventh edition of the Kuhlmann-Anderson Intelligence Tests were used to determine the intelligence level of the students at first, sixth, ninth, and twelfth grades. Form A was used for first grade pupils, Form F for sixth grade, Form G for ninth grade, and Form H, seventh edition, was used in testing twelfth graders.

These tests were chosen because they discriminate between small increments of mental development, timing produces a relatively minor effect on the scores, they are highly reliable, and the use of the median score in computing the mental age factor controls extreme deviation.

Validity and reliability of these tests were originally established in Minnesota, using a minimum of 350 students of each age, from 6 through 16 years. Since the original validation and test for reliability, some 15,000 students from schools in four states have been used to check validity and reliability, as well as to bring norms up to date.

Reliability coefficients, computed using split-half (odd-even) reliability tests and Spearman-Brown correction formula, were: .98 ± .01 for Form A, .92 ± .02 for Form F, .95 ± .01 for Form G and .97 ± .01 for Form H. Correlations between timed and untimed total raw scores, using 100 pupils in each age group, were: .83 ± .05 for Form F, .87 ± .02 for Form G, and .93 ± .01 for Form H. Since Form A used in testing first grade pupils is not timed, no such correlations were available.

The Metropolitan Achievement batteries measured academic achievement of students in the ten selected school communities. These batteries were selected because: (1) they test the student's achievement in specific subject matter areas taught in these school districts — reading, mathematics fundamentals and problem solving, English (language and grammar), literature, geography, history, science, and spelling; and (2) the reliability of the batteries is sufficient.

The 1949 edition used for first, sixth, and ninth grades of the original test group and for first grade of the replication group had reliability coefficients ranging from .906 for the geography sub-test to .954 for the reading sub-test. The standard error of measurement for this edition ranged from 5.1 for the reading sub-test to 9.2 for the history and civics sub-test.

The 1959 edition was available for the sixth grade replication group. The manual reported reliability coefficients ranging from .73 for social studies skills to .94 for the word knowledge subtest. Its standard error of measurement ranged for 2.2 for language skills and social studies skills sub-tests to a high of 3.1 on the word knowledge sub-test.

The advanced form of the Metropolitan Achievement Test was not available when twelfth grade testing started (1960-61). A comprehensive study revealed that the California Achievement Batteries (Advanced Forms AA and W) most nearly measured the same subject matter areas covered by the Metropolitan tests used in the lower grades.

Reliability coefficients reported in the manual for the Advanced Form AA ranged from a low of .83 on sub-test 3 (American History, 1877-1918) to .92 on sub-test 6 (Biological Sciences). The standard error of measurement varied from 2.9 on sub-test 3 to 5.7 on sub-test 6. Sub-tests 1, 2, 3, and 4 comprising Parts I and II of this battery were designed to test the student's knowledge of American History from colonization through 1950. Sub-tests 5 and 6 making up Part III were used to test the student's mastery of Physical and Biological Science.

Reliability coefficients for the Advanced Form W were reported to range from .83 for sub-test 6 (Spelling) to .96 for the Reading and Mathematics sub-tests. Standard error of measurement for raw scores showed a high of 4.8 for sub-test 5 (Mechanics of English) to a low of 2.5 for sub-test 6. Sub-tests 1 and 2 were used to measure the student's reading ability; 3 and 4 tested mathematics reasoning and fundamentals; sub-test 5 measured skills in Mechanics of English; and sub-test 6 tested the student's ability to spell.

It was believed that an additional measure should be made of the student's ability to comprehend written and symbolic material at both first and sixth grades. For this reason, the Chicago Reading Test was also administered to students at these grade levels. The Chicago Reading Tests A and C were standardized on the basis of 8,500 sixth grade pupils in Chicago elementary schools. Test A was used at first grade and Test C at sixth grade. These batteries were designed to appraise the student's ability in word comprehension, sentence comprehension, story, map, and paragraph comprehension and to test his reading speed. This reading test was selected because it appeared freer of cultural biases than others examined.

Sequential Tests of Educational Progress (STEP) were used by Bragg to assess academic achievement in mathematics and reading in his research dealing with size, cost, and achievement in reorganized school districts in Wisconsin. The STEP tests were used primarily because they are easy to give and could be administered by a teacher within each school. The Form 2B of Reading and Mathematics had reliability coefficients of .92 and .84 respectively.

The inventory of the student's personal and and social behavior and characteristics was adapted from the California Test of Personality Elementary Form AA. This test was selected because 5 of its 12 components resembled the non-academic advantages of reorganization listed most often by a group of school administrators from reorganized school districts. Elements of the five components were altered slightly to make them more applicable to the rural areas in which the ten schools were located.

Inventories and Ratings

In order to ascertain the interest patterns of the students, and to study changes in these patterns, an interest inventory using the 'forced choice' technique was developed. The inventory contained 55 pairs of statements, each indicating a particular interest area. The student's choice pattern indicated his relative interest in each of the nine areas. These areas were: outdoor team sports, solitary sports, agricultural, juvenile activities, music, art, reading, group activities, and solitary activities. Three different forms of this inventory have been developed, one for first grade, one for grades six and nine, and a third for use with twelfth grade students.

The teacher rating scale was developed by the investigator and the project advisory committee. It was a five-point scale (1 through 5) with which first and sixth grade teachers could rate each of their pupils on six personal traits and nine family traits. The 15 traits were listed on a single sheet for each pupil. Personal traits were: mental ability, achievement in school, social qualities, willingness to work, home opportunities, and emotional stability. Family traits were: status or prestige in the community, financial status, ability in line of work, special skills, work with the church, moral and ethical standards, educational status, social status, and family background.

Since ninth grade students had been in the high school only six months when they were tested, no teacher rating was made. However, the teacher ratings procedure that had been used at both first and sixth grades was revised at the twelfth. Since the high school students had been exposed to many different teachers, each school was, or will be, asked to provide a committee of five teachers and/or administrators who have been in the system for four or more years. Individually, these five rate each twelfth grader and also together submit a composite rating of each student. Thus, some teachers had to rate 50 or more students on 15 traits.

A method was devised to let teachers rate students as they found time, and to minimize errors due to fatigue and "halo effect." Each trait, with rating scale and student's name, was attached to a 3" x 5" notecard (one trait to each card). From these cards a complete deck of cards, with 15 traits for each senior student in the school, was compiled for each of the five raters plus a sixth deck to be used in the composite rating. Each teacher's deck was randomized by students' names and by traits, and the rating scale was also randomized. This randomization permitted teachers to make ratings on any number of cards per session that time allowed. Any change of attitude from session to session would affect their rating randomly.

Error Limit for the Project

One of the major problems in this type of research is that of establishing acceptable limits for both the *a and b (type I and type II) errors.* It is usually desirable to set the *a error* as low as possible so that few, if any, true hypotheses are rejected. But a low *a error* increases the chance for *b errors* and also for failing to reject false hypotheses.

With this in mind, the researchers decided to set the *a error* limit at $P \leq .05$. With this *a error* limit, a true hypothesis will be rejected on the average only 5 times in 100 over a great many cases.

Statistical Analyses

This project offered two statistical approaches.

1. All data could be treated as a population of selected communities and non-parametric statistical analyses and descriptive techniques only used.

2. Selection of the communities on the basis of both educational and community criteria permitted treatment of data as if they were collected from a sample drawn randomly from the reorganized and non-reorganized school communities of Wisconsin. This second approach was chosen and appropriate parametric statistical techniques used.

Parametric techniques used in analyzing the data collected in this project include Analysis of Variance (ANOVA), Analysis of Covariance, "t" test, Behrens-Fisher "d" test, Chi-square, and Pearson Product-Moment correlation. When ANOVA was used and produced an F ratio that was statistically significant, the differences between pairs of means were further tested for significance by "t" or Behrens-Fisher "d" tests, Tukey's Gap Test, or the construction of confidence intervals. When constructing confidence intervals, the 'within mean square variance' from ANOVA was used to estimate the standard error of the mean difference.

Summary

Data were collected and analyzed and results reported in a study of ninth grade boys and girls in the original group of the ten selected Wisconsin school communities. Related data at grades one and six were included. Data for testing the three major hypotheses and the several sub-hypotheses were collected with many different instruments. These included:

1. Standardized tests — Metropolitan Achievement, STEP Tests, and the Kuhlmann-Anderson Intelligence Test Battery — to measure academic achievement and the level of intelligence of the subjects, and

2. Specially designed inventories and questionnaires — Personal and Social Behavior Inventory, Interest Inventory, Teacher Rating Scale, and 4-H Activity Questionnaire.

The data were analyzed by ANOVA, Analysis of Covariance, "t" test, Behrens-Fisher "d" test, Pearson Product-Moment Correlation, Tukey's Gap Test, and the construction of Confidence Intervals.

The level of significance $P \leq .05$ was selected to identify the significant difference among means.

Chapter IV: Analysis of Data

RESULTS OF STATISTICAL and descriptive analyses appear in this chapter. The first section will analyze variations among opportunities available to students and teachers, including a comparison of the teacher qualifications between reorganized and non-reorganized school communities. Analyses in this section concern the major hypothesis (H_{a}) and its related sub-hypotheses.

The second section will present the analysis of data used in testing major hypothesis H_{b} and the several sub-hypotheses pertaining to academic achievement and personal and social development of the students in the 10 selected school communities.

Section three discusses major hypothesis (H_{c}) and the related sub-hypotheses. Differences are studied in the expenditure for school operation between reorganized and non-reorganized school communities.

Throughout the report the following symbols will identify segments of the sample:

R. total = the total sample of youngsters in the selected reorganized school communities. This includes both those in the reorganized district and those in the community who were not a part of the reorganized district when the study began.

R. only = the sample of youngsters in the reorganized part of the selected reorganized community. This excludes those in the community who are outside of the actual boundaries of the reorganized school district.

N.R. part = the sample of youngsters in the selected reorganized community but not in the reorganized school district. These youngsters are usually in the fringes of the farm service area several miles from the village center.

N.R. = the total sample of youngsters in the communities selected because they had not reorganized their school districts.

Opportunities Available

One of the more salient arguments advanced for school district reorganization is that it increases opportunities for both students and teachers. Although professional educators stress this point when they are encouraging reorganization local citizens seldom mention it in discussing reorganization. Instead, school boards and citizens emphasize financial advantages to constituents.

The first section on opportunities reviews supplemental teaching aids and materials; special assistance to both students and teachers in terms of special staff members (i.e. music, art, physical education, guidance, handicapped, etc.); availability of, and participation in, in-service training for teachers; and the degree to which teachers strive to improve themselves professionally. Study results primarily concern data collected from the original sixth grade group analyzed during this project period.

Teaching Aids and Materials

Hypothesis H_{a1} was formulated on the assumption that the availability of teaching aids and supplemental material are valuable adjuncts to any teaching program. The teaching aids and supplemental materials discussed are representative, not inclusive, of such items available to, or used by, teachers in this study group.

Table II shows the availability of radios in the classroom, and Table III reports the use made of them by teachers. Table II reveals that the number of radios in classrooms over a five-year period has increased at approximately the same rate in all types of school districts, except in the non-reorganized part of the reorganized communities.

While all but four schools studied at the sixth grade had radios, teachers may not necessarily have used educational radio programs greatly. Table III shows that teachers in the reorganized communities used these programs more than did teachers in the non-reorganized school communities. The 46 schools (attendance units) operating at sixth grade in the reorganized communities reported that they "listened regularly" to a mean of

TABLE II.—Availability of a Radio in Classrooms at First and Sixth Grade in Reorganized and Non-reorganized School Communities

	Grade One			Grade Six			
	N (Classrooms)	Yes	%	N (Classrooms)	Yes	%	% Increase
R. total	54	48	88.9	46	46	100	11.1
R. only	37	32	86.4	34	34	100	13.6
N. R. part	17	16	94.1	12	12	100	5.9
N. R.	77	63	81.8	69	65	94.2	12.4

TABLE III.—Number of Educational Radio Programs Used Weekly at Grade Six in Reorganized and Non-reorganized School Communities

	N Classrooms	Programs per week	X̄*
R. total	46	125	2.72
R. Only	34	93	2.74
N. R. part	12	32	2.66
N. R.	69	139	2.015

* X̄ = mean number of radio programs listened to regularly

2.72 educational radio programs per week compared to a mean of 2.015 programs reported by the 69 teachers in non-reorganized school communities.

A Chi square test of radio distribution in classrooms among the different types of districts showed that a value of X^2 equal to or greater than the one observed might be expected to occur in more than five per cent of the samples, due to sampling error alone. One-way analysis of variance was applied to data reported in Table III and gave an F value of .952 at 1 and at 12 degrees of freedom. The differences were not significant.

There is much material available to use with slide and movie projectors, and both are valuable teaching aids. Table IV indicates that of the 46 schools in the 5 reorganized communities, 69.5 per cent reported possession of a slide projector at sixth grade compared to 33.3 per cent of the 54 schools reporting at first grade. Of these 46 schools the 34 which were within the reorganized school districts (R. part) had slide projectors in 88.2 per cent of the cases. Among the schools in the non-reorganized communities only 58 per cent reported that they owned a slide projector at sixth grade, compared to 33.8 per cent at first grade. Applying Chi square, the difference between the 34 reorganized schools (excluding the 12 non-reorganized districts in these five communities — N.R. part) and the 69 non-reorganized schools was found to be significantly different from zero. ($P \leq .01$)

Movie projectors and slide projectors are about equally available. However, at the sixth grade level, considerably fewer non-reorganized schools reported movie projectors than reported slide projectors. Table V shows that 28 of the 46 schools in the reorganized communities reported movie projectors available and of this number, only two were from the non-reorganized school districts (N.R. part) within the reorganized communities. Twenty-five of the 69 schools in the non-reorganized (control) communities reported movie projectors. A Chi square test applied to the distributions indicates that the difference between the number of movie projectors in the total reorganized group (R. total) and the non-reorganized communities (N.R.), as well as the difference between the reorganized segment of the reorganized communities (R. only) and the non-reorganized communities (N.R.), was significantly different from zero at $P \leq .01$.

Although record players of satisfactory quality may be acquired for relatively little, only slightly over 50 per cent of all schools had one for sixth graders, and slightly more than 35 per cent for first graders. In Table VI, the only difference found to be significantly different from zero appeared between the number of record players reported by the 69 non-reorganized schools and the 34 schools in the reorganized part of the five reorganized districts (R. only). Chi square showed this difference in favor of R. only to be significant at $P \leq .05$.

Approximately the same percentage of schools reported pianos in the reorganized as in the non-reorganized school communities. At sixth grade, 88 per cent of the 34 schools in the reorganized districts within the reorganized communities had pianos. The lowest value was by the control group, as shown in Table VII. Seventy-five per cent of the 69 schools had pianos. None of the differences in the availability of pianos at sixth grade between reorganized and non-reorganized schools were sig-

TABLE IV.—Availability of Slide Projectors in Classrooms at First and Sixth Grade in Reorganized and Non-reorganized School Communities

	Grade One			Grade Six			
	N (Classrooms)	Yes	%	N (Classrooms)	Yes	%	% Increase
R. total	54	18	33.3	46	32	69.5	36.2
R. only	37	17	45.9	34	30	88.2	42.3
N. R. part	17	1	5.9	12	2	16.7	10.8
N. R.	77	26	33.8	69	40	58.0	24.2

TABLE V.—Availability of a Movie Projector in Classrooms at First and Sixth Grade in Reorganized and Non-reorganized School Communities

	Grade One			Grade Six			
	N (Classrooms)	Yes	%	N (Classrooms)	Yes	%	% Increase
R. total	54	22	40.7	46	28	60.8	20.1
R. only	37	21	57.8	34	26	76.4	18.6
N. R. part	17	1	5.9	12	2	16.7	10.8
N.R.	77	22	28.6	69	25	36.2	7.6

TABLE VI.—Availability of a Record Player in Classrooms at Sixth Grade in Reorganized and Non-reorganized School Communities

	Grade One			Grade Six			
	N (Classrooms)	Yes	%	N (Classrooms)	Yes	%	% Increase
R. total	54	19	35.2	46	30	65.2	30.0
R. only	37	17	45.9	34	25	73.5	27.6
N. R. part	17	2	11.8	12	5	41.6	29.8
N. R.	77	29	37.7	69	34	49.3	11.6

TABLE VII.—Availability of a Piano in Classrooms at First and Sixth Grade in Reorganized and Non-reorganized School Communities

	Grade One			Grade Six			
	N (Classrooms)	Yes	%	N (Classrooms)	Yes	%	% Increase
R. total	54	46	85.2	46	40	87.0	1.8
R. only	37	34	91.8	34	30	88.2	−3.6
N. R. part	17	12	70.7	12	10	83.3	12.6
N. R.	77	54	70.2	69	52	75.3	5.1

nificantly different from zero when tested by Chi square.

At the sixth grade level, schools in the reorganized communities (both the reorganized and non-reorganized segments of this group) reported a higher percentage of accessibility to this basic science equipment than did schools in the control group (N.R.). Table VIII reveals that in the total reorganized group and its segments slightly over 41 per cent had basic science equipment, while only 17.4 per cent of reorganized schools (N = 69) possessed such facilities. A Chi square test showed the differences between the total reorganized group and the control group and between the reorganized segment of the reorganized communities and the control to be significantly different from zero at P ≤ .01.

There is very little difference in the availability of basic athletic equipment between the two types of communities. A similar percentage of schools in all four categories reported in Table IX had this equipment. While no attempt was made to evaluate the difference in quality and quantity of either basic athletic or science equipment, it was assumed that all met the minimum standards established by the State Department of Public Instruction. The reorganized communities reported a slightly higher availability of the basic athletic equipment than the non-reorganized (control) communities, but none of these differences were found to be significantly different from zero when tested by means of Chi square.

TABLE VIII.—Availability of Basic Science Equipment at Sixth Grade in Classrooms of Reorganized and Non-reorganized School Communities

	Grade Six		
	N Classrooms	Yes	% Available
R. total	46	19	41.3
R. only	34	14	41.2
N. R. part	12	5	41.7
N. R.	69	12	17.4

TABLE IX.—Availability of Basic Athletic Equipment at Sixth Grade in Classrooms of Reorganized and Non-reorganized School Communities

	Grade Six		
	N Classrooms	Yes	% Available
R. total	46	44	95.7
R. only	34	33	97.1
N. R. part	12	11	91.7
N. R.	69	66	95.7

There was little difference among samples in the percentage of schools reporting the availability of art materials at the sixth grade. Table X shows that, in this case, a slightly lower percentage of non-reorganized schools in the reorganized communities (N.R. part) reported the availability of art materials than did schools in the control group (N.R.). Here again, Chi square revealed no significant differences.

A higher percentage of sixth grades in the control group (N.R.) provided up-to-date maps than did any of the three categories of schools in the reorganized communities. Table XI shows that over 75 per cent of the control schools had current maps, compared to 67 per cent in the total reorganized group. Although there was a range of 17 per cent between the high and low groups, none of the differences were significantly different from zero.

TABLE X.—Availability of Art Materials at Sixth Grade in Classrooms of Reorganized and Non-reorganized School Communities

	Grade Six		
	N Classrooms	Yes	%
R. total	46	42	91.3
R. only	34	32	94.1
N. R. part	12	10	83.3
N. R.	69	66	95.6

TABLE XI.—Availability of Up-to-Date Maps at Sixth Grade in Classrooms of Reorganized and Non-reorganized School Communities

	Grade Six		
	N Classrooms	Yes	%
R. total	46	31	67.4
R. only	34	24	70.6
N. R. part	12	7	58.3
N. R.	69	52	75.4

Data in Table XII pertaining to the availability of a subject matter corner indicate that all segments of the reorganized communities show a higher percentage of their schools developing such a teaching area than do the schools in the control (N.R.) group. It is noted that schools in the non-reorganized part of the reorganized group show the highest availability and schools in the control group the lowest. Application of a Chi square test to these data show the difference between the control group and each of the other groups listed in Table XII to be significantly different from zero at P ≤ .05.

Table XIII shows that project work tables are available to a greater extent in the reorganized communities and the reorganized part of those communities than for either of the two other groups. (N.R. part and N.R.) Thirty-four of the 46 schools in the reorganized communities (R. total) reported that they had a project work table compared to 43 of the 69 schools in the non-re-

TABLE XII.—Availability of Subject Matter Corner at Sixth Grade in Classrooms of Reorganized and Non-reorganized School Communities

	Grade Six		
	N Classrooms	Yes	%
R. total	[illegible]	[illegible]	[illegible]
R. only	[illegible]	[illegible]	[illegible]
N. R. part	[illegible]	[illegible]	[illegible]
N. R.	[illegible]	[illegible]	[illegible]

organized communities (N.R.). The lowest percentage reported was among the schools in the non-reorganized districts within the reorganized communities (N.R. part) where only seven of 12 reported the availability of a project work table. None of these differences were significant.

Data in Table XIV, pertaining to the availability of collateral reading material, do not indicate any great difference among the percentage of schools responding affirmatively to this item. Affirmative responses found in Table XIV range from 94.2 per cent for the reorganized segment of the reorganized communities (R. only) to 87 per cent for the control group (N.R.). None of these differences were significantly different from zero when tested by Chi square.

Summary: Reorganized school communities had more teaching aids and supplemental materials than did schools in the non-reorganized (control) communities, with the exception of up-to-date maps. Of the 13 areas of teaching aids and supplemental materials studied, only five showed differences that were significantly different from zero at $P \leqq .05$.

TABLE XIII.—Availability of a Project Work Table at Sixth Grade in Classrooms of Reorganized and Non-reorganized School Communities

	Grade Six		
	N Classrooms	Yes	%
R. total	[illegible]	[illegible]	[illegible]
R. only	[illegible]	[illegible]	[illegible]
N. R. part	12	7	58.3
N. R.	63	43	68.3

TABLE XIV.—Availability of Collateral Reading at Sixth Grade in Classrooms of Reorganized and Non-reorganized School Communities

	Grade Six		
	N Classrooms	Yes	%
R. total	64	60	93.8
R. only	52	49	94.2
N. R. part	12	11	91.7
N. R.	69	60	87.0

Significant differences were found as follows: (The group in italics shows the greatest availability of the factor.)

1. Slide projector — *Reorganized part of reorganized group* versus non-reorganized (control) group — $P \leqq .01$.
2. Movie Projector — *Total reorganized group* versus control group — $P \leqq .01$. *Reorganized part of reorganized group* versus control group — $P \leqq .01$.
3. Record player — *Reorganized part of reorganized group* versus control group (non-reorganized) — $P \leqq .05$.
4. Basic science equipment — *Total reorganized group* versus control group — $P \leqq .01$. *Reorganized part of reorganized group* versus non-reorganized (control) group $P \leqq .01$.
5. Subject matter corner — *Total reorganized group* versus control group — $P \leqq .01$. *Reorganized part of reorganized group* versus control group $P \leqq .05$.

On the basis of the significant differences found and on the basis of greater availability of materials in reorganized communities in all cases except for maps, null hypothesis H_{10}, "There are no differences between reorganized and non-reorganized school communities in the availability of teaching aids and supplemental material," was rejected.

Teacher Qualifications

In order to determine the differences in teacher qualifications between reorganized and non-reorganized school communities, the Teacher Interview schedule included questions pertaining to: (1) years training beyond high school; (2) participation in in-service training; (3) attendance at summer school during the past two years; and (4) visitation of other teacher's classrooms for the purpose of improving teaching methods.

At both first and sixth grades, Table XV shows that teachers in the non-reorganized segments of the reorganized communities (N.R. part) had the least amount of training beyond high school. These first grade teachers reported a mean of 1.94 years training beyond high school. When the sample reached the sixth grade their teachers averaged 2.42 years. Only a small proportion of the teachers interviewed at first grade were teaching the sample when teachers were interviewed at grade six. Table XV shows that during the five-year interval teachers in all four groups had increased their training beyond high school. These data also show that teachers in the reorganized school districts had a greater increase than did those teaching in either the non-reorganized part of the reorganized communities or those in the control group (N.R.). This

TABLE XV.—Number of Years of Training Beyond High School as Reported by First and Sixth Grade Teachers in Classrooms of Reorganized and Non-reorganized School Communities

	Grade One		Grade Six		
	N Teachers	$\bar{X}$ years beyond H. S.	N Teachers	$\bar{X}$ years beyond H. S.	$\bar{X}$ years Change
R. total	55	[illegible]	66	[illegible]	[illegible]
R. only	38	[illegible]	54	[illegible]	[illegible]
N. R. part	17	[illegible]	12	[illegible]	[illegible]
N. R.	77	[illegible]	69	[illegible]	[illegible]

suggests a greater incentive or pressure within reorganized school districts toward professional upgrading of staff members.

Closely allied to the analysis of the number of years training beyond high school, Table XVI reported attendance in summer school during the two years prior to the interview. Although these data show a trend toward greater participation in summer school over five years in interviews at first and sixth grades, the most noticeable factor is the high percentage of teachers from the non-reorganized districts within the reorganized communities reporting attendance at summer school. This group also reported the least training beyond high school and a low participation in in-service training. See Table XVII.

TABLE XVI.—Attendance at Summer School During Past Two Years as Reported by First and Sixth Grade Teachers in Reorganized and Non-reorganized School Communities

	Grade One			Grade Six			
	N Teachers	Yes	%	N Teachers	Yes	%	Increase in Attendance
R. total	55	22	40.0	66	48	72.7	32.7
R. only	38	19	50.0	54	38	70.4	20.4
N. R. part	17	3	17.6	12	10	83.3	65.7
N. R.	77	21	27.3	69	36	52.2	24.9

TABLE XVII.—Days of In-service Training During Academic Year as Reported by First and Sixth Grade Teachers in Classrooms of Reorganized and Non-reorganized School Communities

	Grade One			Grade Six			
	N Teachers	Total Days	Mean Days	N Teachers	Total Days	Mean Days	Change
R. total	55	254	4.49	66	301	4.6	.13
R. only	38	190	5.0	54	274	5.1	.1
N. R. part	17	64	3.76	12	37	3.08	−.68
N. R.	77	313	4.07	69	284	4.12	.05

When the sixth grade data in Table XVI were tested by Chi square, a significant difference from zero was noted between the control group (N.R.) and the total reorganized group (R-total) ($P \leq .05$) and between the control group and the non-reorganized part of the reorganized group (N.R. part) ($P \leq .01$). In addition, the differences between the non-reorganized part of the reorganized group (N.R. part) at grades one and six were found to be significantly different from zero at $P \leq .01$. The other increases were not statistically significant.

Teachers in the reorganized communities had a higher mean attendance at in-service training activities. Although the reorganized districts held an average of two more days in-service training than non-reorganized districts, no attempt was made to analyze the difference, if any, in the quality of these programs. For the most part, in-service training in the non-reorganized communities was conducted on a county-wide basis by county superintendents of schools and was more general than the special programs in the reorganized districts. In this latter case, in-service training at the local level was conducted for teachers within the district, hence the training could cover problems which were peculiar to that district. The difference in amount can be accounted for the fact that in the reorganized districts teachers participated in their own district's in-service program as well as most of the programs developed by the county superintendent's office.

Table XVII shows that only in the case of teachers in the non-reorganized districts within the reorganized communities (N.R. part) was there a decrease in the mean number of days participation in in-service training activities in the five-year period. Analysis of variance applied to these data failed to show any difference significantly different from zero.

Only one-half or fewer of the sixth grade teachers in the different types of districts visited other teacher's classes for the purpose of improving their own teaching methods. Although there was a general increase in participation in reorganized communities, this increase was small and Chi square tests revealed no significant differences. When the data on visitation shown in Table XVIII were tested for the differences at sixth grade, none were found to be significantly different from zero.

TABLE XVIII.—Visitation of Classrooms During Past Year for Purpose of Improving Teaching Methods as Reported by First and Sixth Grade Teachers in Classrooms of Reorganized and Non-reorganized School Communities

	Grade One			Grade Six			
	N Teachers	Yes	%	N Teachers	Yes	%	% Increase
R. total	55	17	30.9	66	19	40.5	2.4
R. only	38	15	39.5	54	17	50.0	10.5
N. R. part	17	2	11.7	12	2	16.7	5.0
N. R.	77	28	36.4	69	23	33.3	− 3.1

Summary: Teachers from reorganized districts reported the most training beyond high school when interviewed at sixth grade and also showed a greater increase in this factor during the five-year period between the first and sixth grade study. Teachers from schools in non-reorganized districts within the reorganized communities (N.R. part) reported the least training beyond high school at both first and sixth grades as well as the least increase during the same period.

Non-reorganized districts of the reorganized group reported a higher percentage of their teachers attending summer school at the time of the sixth grade study as well as the greatest increase between first and sixth grade. Differences between non-reorganized districts in the reorganized part and the control group were significant ($P \leq .05$) and between the reorganized group and the control at $P \leq .01$.

Although teachers from the reorganized districts reported attending more in-service training meetings than teachers from either the control communities (N.R.) or those teaching in non-reorganized districts within the reorganized group (N.R. part), no differences were significantly different from zero.

Fifty per cent of the teachers in reorganized districts reported that they visited other classrooms as a means of improving their teaching methods. The other teacher groups reported a lower percentage participating in this improvement practice and the control group showed a decrease in participation between first and sixth grade. None of the differences reported on visitation were statistically significant.

Special Assistance

Reorganized districts offer more special assistance to elementary students in the form of trained teachers and specialists in the areas of music, art, physical education, guidance, and for handicapped. Several small districts banded together into a single administrative unit can provide these specialists where one district alone couldn't.

Tables XIX through XXIII show the distribution of specialists in the area of music, art, physical education, guidance, and handicapped within the two types of districts at first and sixth grades. No specialists were available to non-reorganized school districts within the reorganized communities (N.R. part), and only in the case of music and help for the handicapped were an appreciable number reported by schools in the control group (N.R.).

The differences between the number of specialists in the reorganized and the non-reorganized (control) communities in grade six were found to be significantly different from zero, when tested by Chi square, as follows:

1. Music specialist — $P \leq .01$.
2. Art specialist — $P \leq .01$.
3. Special help for the handicapped — not significant.
4. Physical Education specialist — $P \leq .01$.
5. Guidance specialist — $P \leq .01$.

Summary: On the basis of the differences found to be significantly different from zero the hypothesis, H_1, — "There are no differences between reorganized and non-reorganized school communities in the amount of special assistance available for students," was rejected.

TABLE XIX.—Availability of Specialist in *Music* in First and Sixth Grade Classrooms of Reorganized and Non-reorganized School Communities

	Grade One			Grade Six			
	N Classrooms	Yes	%	N Classrooms	Yes	%	% Increase
R. total	54	31	57.5	46	28	60.9	3.4
R. only	37	31	83.8	34	28	82.3	−1.5
N. R. part	17	0	0	12	0	0	0
N. R.	77	11	14.3	69	11	16	1.7

TABLE XX.—Availability of a Specialist in *Art* in First and Sixth Grade Classrooms of Reorganized and Non-reorganized School Communities

	Grade One			Grade Six			
	N Classrooms	Yes	%	N Classrooms	Yes	%	% Increase
R. total	54	0	0	46	12	26.0	26.0
R. only	37	0	0	34	12	34.6	34.6
N. R. part	17	0	0	12	0	0	0
N. R.	77	1	1.3	69	2	2.9	1.6

TABLE XXI.—Availability of a Specialist to Help Handicapped in First and Sixth Grade Classrooms of Reorganized and Non-reorganized School Communities

	Grade One			Grade Six			
	N Classrooms	Yes	%	N Classrooms	Yes	%	% Increase
R. total	54	15	27.8	46	14	30.5	2.7
R. only	37	15	40.6	34	14	41.2	.6
N. R. part	17	0	0	12	0	0	0
N. R.	77	17	22.1	69	19	27.6	5.5

TABLE XXII.—Availability of Special Physical Education Teacher in First and Sixth Grades in Classrooms of Reorganized and Non-reorganized School Communities

	Grade One			Grade Six			
	N Classrooms	Yes	%	N Classrooms	Yes	%	% Increase
R. total	54	22	40.7	46	24	52.2	11.5
R. only	37	22	59.5	34	24	70.7	11.2
N. R. part	17	0	0	12	0	0	0
N. R.	77	3	1.7	69	1	1.4	− .3

TABLE XXIII.—Availability of a Guidance Specialist at First and Sixth Grades in Classrooms of Reorganized and Non-reorganized School Communities

	Grade One			Grade Six			
	N Class-rooms	Yes	%	N Class-rooms	Yes	%	% Increase
R. total	54	1	1.9	46	10	21.8	19.9
R. only	37	1	2.7	34	10	30.6	27.9
N. R. part	17	0	0	12	0	0	0
N. R.	77	7	9.1	69	1	1.4	−7.7

Other Opportunities

Many other opportunities and advantages of reorganized school districts could be listed. Data were collected at first and sixth grade on four additional opportunities. These were accident insurance provided by the school; type of heating plant; availability of a telephone; and whether or not the school had a lunch program.

More school districts are providing accident insurance for all students. See Table XXIV. A test of the differences between first and sixth grade showed no significant difference. At sixth grade, a Chi square test of the data showed that in a comparison between the reorganized part of the reorganized communities (R. only) and the control group (N.R.) there was a significant difference at $P \leq .01$ favoring the reorganized districts.

School buildings in non-reorganized districts are usually thought of as having some type of space heater within the classroom. Table XXV shows that this is no longer the case. Although the control group reported central heating in 71 per cent of its buildings, the reorganized districts reported only 79 per cent centrally heated. The non-reorganized districts within the reorganized communities (N.R. part) reported the highest incidence of central heating, slightly more than 83 per cent. A chi square test failed to show any significant differences in the data collected on central heating at the sixth grade level.

TABLE XXIV.—Provision of Accident Insurance for all Students in First and Sixth Grade in Classrooms of Reorganized and Non-reorganized Communities

	Grade One			Grade Six			
	N Class-rooms	Yes	%	N Class-rooms	Yes	%	% Increase
R. total	54	19	35.2	46	39	67.3	32.1
R. only	37	19	51.3	34	29	85.3	34.0
N. R. part	17	0	0	12	2	16.7	16.7
N. R.	77	13	16.9	69	37	53.7	36.8

TABLE XXV.—Incidence of Central Heating Units in First and Sixth Grade Classrooms of Reorganized and Non-reorganized School Communities

	Grade One			Grade Six			
	N Class-rooms	Yes	%	N Class-rooms	Yes	%	% Increase
R. total	54	33	61.2	46	37	80.4	19.2
R. only	37	26	70.3	34	27	79.4	9.1
N. R. part	17	7	41.2	12	10	83.3	42.1
N. R.	77	49	63.7	69	49	71.0	6.3

Although the telephone is accepted as a household necessity, data in Table XXVI indicate no such acceptance in rural schools. At sixth grade, less than 40 per cent of the control group (N.R.) reported a telephone in the building, while over 79 per cent of the reorganized districts reported that their building had a telephone. Differences between the total reorganized group (R. total) and the control (N.R.), and between the reorganized districts (R. only and the control, were both found to differ significantly from zero at $P \leq .01$.

TABLE XXVI.—Incidence of Telephones in School Buildings of First and Sixth Grade Reorganized and Non-reorganized School Communities

	Grade One			Grade Six			
	N Build-ings	Yes	%	N Build-ings	Yes	%	% Increase
R. total	54	30	55.6	46	37	76.2	20.6
R. only	34	29	78.3	34	27	79.4	1.1
N. R. part	17	1	5.9	12	8	66.7	60.6
N. R.	77	17	--	69	27	39.2	17.1

Table XXVII presents data pertaining to the availability of a school lunch program in the two types of districts. The number of schools reporting a lunch program varies from 24 of the 34 reorganized schools (R. only) responding to only two of the 12 non-reorganized districts within the reorganized group (N.R. part) and 17 of the 69 control schools.

A Chi square test showed that the differences existing between the non-reorganized (N.R.) communities and both the total reorganized communities (R. total) and the reorganized districts (R. only) were statistically significant ($P \leq .01$).

Summary: Significant differences favored reorganized communities for availability of accident insurance, telephone in the school, and a school lunch program. There were no significant differences on the availability of central heating.

TABLE XXVII.—Incidence of School Lunch Program Furnished by Schools in First and Sixth Grade Classrooms of Reorganized and Non-reorganized School Communities

	Grade One			Grade Six			
	N Class-rooms	Yes	%	N Class-rooms	Yes	%	% Increase
R. total	54	32	59.3	46	26	56.5	− 2.8
R. only	37	20	54.1	34	24	70.6	16.5
N. R. part	17	12	70.6	12	2	16.7	−53.9
N. R.	77	32	41.6	69	17	24.6	−17.0

Analysis of data collected to study differences in opportunities available to the students and teachers in reorganized and non-reorganized school communities involved in this project showed differences significantly different from zero to exist in favor of reorganized districts in the following areas:

Slide projector — $P \leq .01$.
Movie projector — $P \leq .01$.
Record player — $P \leq .05$.
Basic science equipment — $P \leq .01$.
Subject matter corner — $P \leq .05$.
Music specialist — $P \leq .01$.
Art specialist — $P \leq .01$.
Physical education specialist — $P \leq .01$.
Guidance specialist — $P \leq .01$.
Accident insurance — $P \leq .01$.
Telephone in the building — $P \leq .01$.
School lunch program — $P \leq .01$.

In the case of attendance of summer school during the past two years by the teachers, a difference significant at $P \leq .05$ was found to exist between the total reorganized group and the control and also between the non-reorganized part of the reorganized group and the control group. All other factors analyzed, with the exception of up-to-date maps, showed differences in favor of the reorganized districts. Therefore, on the basis of these findings, the major hypothesis H_{01} — "There are no differences between reorganized and non-reorganized school communities in the educational opportunities available to the children," was rejected.

Achievement

Academic

Previous research completed by Hieronymus[1] and others has revealed higher academic achievement among students receiving their elementary schooling in systems providing one or more teachers per class, than in schools where a teacher has to teach multiple grades. Both boys and girls at the sixth grade attending reorganized schools scored higher in 21 of the 22 measures of achievement than did students attending non-reorganized schools. This was true even though the youngsters in the traditionally organized schools (N.R.) scored higher on standardized achievement tests at first grade. At sixth grade, both boys and girls from reorganized schools had significantly higher science achievement scores than did those in non-reorganized schools, and boys from reorganized districts showed significantly higher scores in geography achievement than the boys attending non-reorganized schools.

Analysis of data collected from the ten study communities at the ninth grade tended to confirm the findings of earlier research that analyzed high school achievement on the basis of the type of elementary school attended. It also confirmed the lack of differences between the scores on intelligence tests for those youngsters in the reorganized and non-reorganized study communities.

Data collected on achievement of girls in reorganized and non-reorganized school districts as measured by the Metropolitan Achievement Battery, Form R, showed that the girls who had attended reorganized schools since first grade scored significantly higher in five of the ten sub-tests and in total achievement than girls who had attended non-reorganized elementary schools. In fact, girls in the reorganized districts scored higher on all sub-tests than did the girls in non-reorganized (N.R.) communities.

Comparing ninth grade with sixth grade data reveals marked increase in academic achievement of girls in the reorganized parts of reorganized communities. Table XXVIII presents ninth grade data which shows differences between mean scores that are signicantly different from zero when tested by the "t" and the Behrens-Fisher "d" tests for the following:

1. Reading — $P \leq .05$.
2. Arithmetic Fundamentals — $P \leq .05$.
3. Arithmetic Problem Solving — $P \leq .05$.
4. Literature — $P \leq .01$.
5. Science — $P \leq .01$.
6. Total Achievement — $P \leq .05$.

Analysis of data to determine the differences between girls in the total reorganized group (R. total) and the control group (N.R.) shows significant differences in academic achievement in the same areas as above, favoring girls in reorganized communities. The "t" and "d" tests reported in Table XXIX show the differences between the mean raw scores are significantly different from zero. Table XXIX also lists the probability of the mean differences being zero for the following areas:

1. Reading — $P \leq .05$.
2. Arithmetic Fundamentals — $P \leq .05$.
3. Arithmetic Problem Solving — $P \leq .05$.
4. Literature — $P \leq .01$.
5. Science — $P \leq .01$.
6. Total Achievement — $P \leq .05$.

A further analysis of achievement data collected for ninth grade girls as shown in Table XXX, compares girls who attended reorganized schools (R. only) at the elementary level with those who attended non-reorganized elementary schools within the reorganized school communities (N.R. part). No mean differences between these two groups of girls are significantly different from zero. In fact, in Vocabulary, Total English, Literature, and Spelling sub-tests, the girls who attended the non-reorganized elementary schools within the reorgan-

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[1] Hieronymus, *Op. Cit.*, p. 8.

TABLE XXVIII.—Differences between the Mean Scores Achievement Tests of Ninth Grade Girls in the Reorganized Part of Reorganized Communities and in the Non-reorganized Communities

	"t"	"d"	σR_o	$\bar{X} R_o$	σNR	$\bar{X} NR$	$\bar{X} R_o - \bar{X} NR$
Reading	1.984[c]	1.992	9.2	43.3	9.6	40.3	3.0
Vocabulary	1.319	1.316	9.4	40.7	9.1	38.8	1.9
Arithmetic Fundamentals	2.670[b]	2.652	12.3	40.7	11.4	35.7	5.0
Arithmetic Problems	2.551[a]	2.574	7.7	21.1	8.5	17.8	3.3
Total English	.600	.598	14.0	48.6	13.4	47.3	1.3
Literature	2.637[b]	2.633	8.4	31.2	8.2	27.7	3.5
History	1.656	1.619	9.2	28.4	7.1	26.2	2.2
Geography	1.780	1.729	6.5	29.6	6.9	27.7	1.9
Science	3.094[b]	3.137	7.2	38.8	8.5	34.9	3.9
Spelling	.799	.801	11.4	29.4	11.8	27.9	1.5
Total Achievement	2.377[a]	2.346	94.0	357.0	81.0	323.9	33.1

Reorganized part only = R_o
Non-Reorganized = NR
[a] Significant at $P \leq .05$
[b] Significant at $P \leq .01$

TABLE XXIX.—Differences between the Mean Scores on Achievement Tests of Ninth Grade Girls in the Total Reorganized Communities and in the Non-reorganized Communities

	"t"	"d"	σR_t	$\bar{X} R_t$	σNR	$\bar{X} NR$	$\bar{X} R_t - \bar{X} NR$
Reading	2.033[a]	2.031	8.9	43.2	9.6	40.3	2.9
Vocabulary	1.752	1.753	9.3	41.2	9.1	38.8	2.4
Arithmetic Fundamentals	2.305[a]	2.307	12.6	39.9	11.4	35.7	4.2
Arithmetic Problems	2.392[c]	2.390	7.8	20.7	8.5	17.8	2.9
Total English	.773	.774	14.8	48.9	13.4	47.3	1.6
Literature	2.967[b]	2.970	9.0	31.6	8.2	27.7	3.9
History	1.709	1.714	9.3	28.4	7.1	26.2	2.2
Geography	1.621	1.623	7.6	29.4	6.9	27.7	1.7
Science	2.580[b]	2.579	8.2	38.1	8.5	34.9	3.2
Spelling	1.149	1.149	11.7	29.9	11.8	27.9	2.0
Total Achievement	2.420[a]	2.424	92.9	355.9	81.0	323.9	32.0

Reorganized total = R_t
Non-Reorganized = NR
[a] Significant at $P \leq .05$
[b] Significant at $P \leq .01$

TABLE XXX.—Differences between the Mean Scores on Achievement Tests of Ninth Grade Girls in the Reorganized Part of Reorganized Communities and in the Non-reorganized Part of These Same Communities

	"t"	"d"	σR_o	$\bar{X} R_o$	NR_p	$\bar{X} NR_p$	$\bar{X} R_p - \bar{X} NR_p$
Reading	.271	.296	9.2	43.3	7.8	42.6	.7
Vocabulary	−1.091[a]	−1.117	9.4	40.7	8.8	43.6	−2.9
Arithmetic Fundamentals	1.360	1.295	12.3	40.7	13.0	36.0	4.7
Arithmetic Problems	.910	.856	7.7	21.1	8.2	19.1	2.0
Total English	− .467[a]	.392	14.0	48.6	17.9	50.5	−1.9
Literature	− .869[a]	.705	8.4	31.2	11.4	33.4	−2.2
History	.007	.007	9.2	28.4	9.9	28.4	0.0
Geography	.330	.232	6.5	29.6	11.3	28.9	.7
Science	1.614	1.207	7.2	38.8	11.2	35.1	3.7
Spelling	− .963[a]	.894	11.4	29.4	12.5	32.5	−3.1
Total Achievement	.229	.235	94.0	357.0	88.0	351.1	5.9

Reorganized part only = R_o
Non-Reorganized part = NR_p
[a] = Difference in favor of non-reorganized part

ized communities actually scored higher than did the girls in the reorganized districts. In the two preceding comparisons, the differences between the girls in reorganized and non-reorganized communities on mean total achievement scores were both over 30 points, while this difference between girls from the non-reorganized part of the reorganized communities (N.R. part) and girls from the reorganized part (R. only) was less than six points.

Ninth grade boys who attended the two different types of elementary schools exhibited a quite different pattern of achievement than that found for the girls. Tables XXXI, XXXII, and XXXIII show that not all of the higher sub-test raw scores on the Metropolitan Achievement Test were attained by boys who attended an elementary school in a reorganized community.

Table XXXI compares achievement test raw scores obtained by boys from the reorganized part of reorganized communities with those from the non-reorganized communities. Only in the case of Science Achievement did the boys from the reorganized areas score significantly higher than did those from non-reorganized districts. Table XXXI also reveals a variation from the girls in the same schools as noted in Table XXVIII. Girls in the reorganized part of the reorganized communities attained the highest achievement scores in all subtests. However boys attending schools in non-reorganized (N.R.) communities scored higher (not)

TABLE XXXI.—Differences between the Mean Scores on Achievement Tests of Ninth Grade Boys in the Reorganized Part of Reorganized Communities and in the Non-reorganized Communities

	"t"	"d"	σR_p	$\bar{X} R_p$	σNR	$\bar{X} NR$	$\bar{X}R_p - \bar{X}NR$
Reading	− .079*	− .078	11.5	39.3	10.0	39.4	− .1
Vocabulary	.491	.478	10.4	38.2	9.5	37.4	.8
Arithmetic Fundamentals	.975	.931	14.0	37.1	11.9	35.2	1.9
Arithmetic Problems	− .321*	− .321	8.2	18.6	8.2	19.0	− .4
Total English	− .108*	− .161	14.7	39.3	12.9	39.6	− .3
Literature	1.890	1.733	11.2	29.3	8.3	26.6	2.7
History	1.214	1.067	13.2	29.5	8.2	27.6	1.9
Geography	.362	.355	8.8	29.2	8.3	28.7	.5
Science	2.040^b	1.882	11.3	38.6	8.1	35.7	2.9
Spelling	.490	.460	13.5	22.1	11.0	21.2	.9
Total Achievement	1.226	1.151	104.8	326.8	79.1	310.3	16.5

Reorganized part only = R_p
Non-Reorganized = NR
* Difference in favor of non-reorganized
^{b} Significant at $P \leq .05$

TABLE XXXII.—Differences between the Mean Scores on Achievement Tests of Ninth Grade Boys in the Total Reorganized Communities and in the Non-reorganized Communities

	"t"	"d"	σR_t	$\bar{X} R_t$	σNR	$\bar{X} NR$	$\bar{X}R_t - \bar{X}NR$
Reading	− .345*	−.337	11.7	38.9	10.0	39.4	− .5
Vocabulary	− .285*	.279	10.8	37.0	9.5	37.4	− .4
Arithmetic Fundamentals	.048	.046	14.2	35.3	11.9	35.2	.1
Arithmetic Problems	− .819	−.818	8.3	18.1	8.2	19.0	−.9
Total English	−1.020*	−1.000	14.5	37.7	12.9	39.6	−1.9
Literature	1.230*	1.178	10.9	28.3	8.3	26.6	1.7
History	.534	.502	12.3	28.3	8.2	27.6	.7
Geography	− .528*	−.525	9.6	28.1	8.3	28.7	−.6
Science	1.145	1.088	11.1	37.2	8.1	35.7	1.5
Spelling	− .647*	−.627	13.3	20.1	11.0	21.2	−1.1
Total Achievement	.261	.250	102.7	313.5	79.1	310.3	3.2

Reorganized total = R_t
Non-Reorganized = NR
* = Difference in favor of non-reorganized

TABLE XXXIII.—Differences between the Mean Scores on Achievement Tests of Ninth Grade Boys in the Reorganized Part of Reorganized Communities and in the Non-reorganized Part of These Same Communities

	"t"	"d"	σR_p	$\bar{X} R_p$	σNR_p	$\bar{X} NR_p$	$\bar{X}R_p - \bar{X}NR_p$
Reading	.567	.566	11.5	39.3	12.2	37.6	1.7
Vocabulary	1.995	1.713	10.4	38.2	11.3	33.3	4.9
Arithmetic Fundamentals	2.192*	2.231	14.0	37.1	13.3	29.4	7.7
Arithmetic Problems	1.118	1.114	8.2	18.6	8.1	16.3	2.3
Total English	1.890	2.032	14.7	39.3	12.4	32.5	6.8
Literature	1.714	1.956	11.2	29.3	8.6	24.7	4.6
History	1.590	2.113	13.2	29.5	7.4	24.6	4.9
Geography	2.196*	2.513	8.8	29.2	6.7	24.5	4.7
Science	2.295*	2.427	11.3	38.6	9.3	32.6	6.0
Spelling	2.995^b	2.982	13.5	22.1	10.3	13.7	8.4
Total Achievement	2.251*	2.546	104.8	326.8	81.7	270.1	56.7

Reorganized part only = R_p
Non-reorganized part = NR_p
* Significant at $P \leq .05$
^{b} Significant at $P \leq .01$

significantly) in Reading, Arithmetic Problem Solving, and Total English than did boys attending reorganized communities.

Table XXXII compares the total reorganized group (R. total) with the control group (N.R.). The data pattern resembles Table XXXI. In this case, however, the boys in the control group scored higher in six sub-tests — Reading, Vocabulary, Arithmetic Problem Solving, Total English, Geography, and Spelling — than did the boys attending reorganized elementary schools. None of the mean differences were significant.

Boys revealed a pattern much different from girls in comparisons between reorganized and non-reorganized parts of the reorganized communities. Analyses of these data are shown in Table XXXIII. Boys who attended schools in the reorganized part scored significantly higher than did their counterparts who attended in the non-reorgan[illegible] part on:

1. Arithmetic Fundamentals — $P \leq$ [illegible];
2. Geography — $P \leq .05$;
3. Science — $P \leq .05$;
4. Spelling — $P \leq .01$;
5. Total Achievement — $P \leq .05$.

In these comparisons, the boys in the reorganized part scored higher on all sub-tests than did those attending non-reorganized part of the same communities.

Comparisons between each pair of the five pairs of communities in the basic study indicate that most of the achievement differences favoring reorganized school communities can be traced to the two larger reorganized communities. The two smaller reorganized communities show only minor advantages and the fifth reorganized community is variable. (See Table I for listing of the pairs.)

A cross-sectional study conducted by Bragg as a part of this project investigated the matter of academic achievement within reorganized schools in Wisconsin. Achievement tests and Henmon-Nelson intelligence tests were administered to ninth grade students of 39 reorganized schools in Wisconsin which had operated as reorganized districts for at least nine years. In analyzing these data, Bragg categorized the schools both in terms of size (large, medium, and small enrollment) and in terms of cost (high, medium, and low operating cost per pupil).

In Figures 3 and 4 the distributions of the means for the size factor indicate that most of the districts observed have small schools. Figure 3 reveals that over half of the schools (25) had a net enrollment in both high school and elementary school for 1958-59 of less than 600 students. The facts in Figure 4 show that over a five-year period the average net enrollment in the elementary schools of 39 reorganized districts, there were 31 with less than 500 students, and 12 with less than 200 students.

Figures 5, 6, and 7 show the distributions for other factors of achievement, expenditure per pupil, and Henmon-Nelson raw scores in that order. All three of these curves seem to be skewed slightly to the right; however, this may not be of consequence, since the schools vary so widely in enrollment and other factors.

Inspection of Table XXXIV reveals some differences among the three size groups of schools being studied, both in achievement and in the Henmon-Nelson intelligence test raw scores. It might be assumed that differences for both of these factors would coincide, but they don't.

Table XXXIV also indicates that the highest intelligence test raw scores were compiled by students from the large schools and that the lowest scores came from the small schools. The medium sized schools had the highest means on STEP

TABLE XXXIV.—Mean Achievement and Henmon-Nelson Intelligence Scores in Large, Medium, and Small Schools

Size of School	Mean Achievement Scores	Mean Henmon-Nelson Scores
Large Schools	60.498	45.172
Medium Sized Schools	61.041	44.923
Small Schools	58.940	43.098

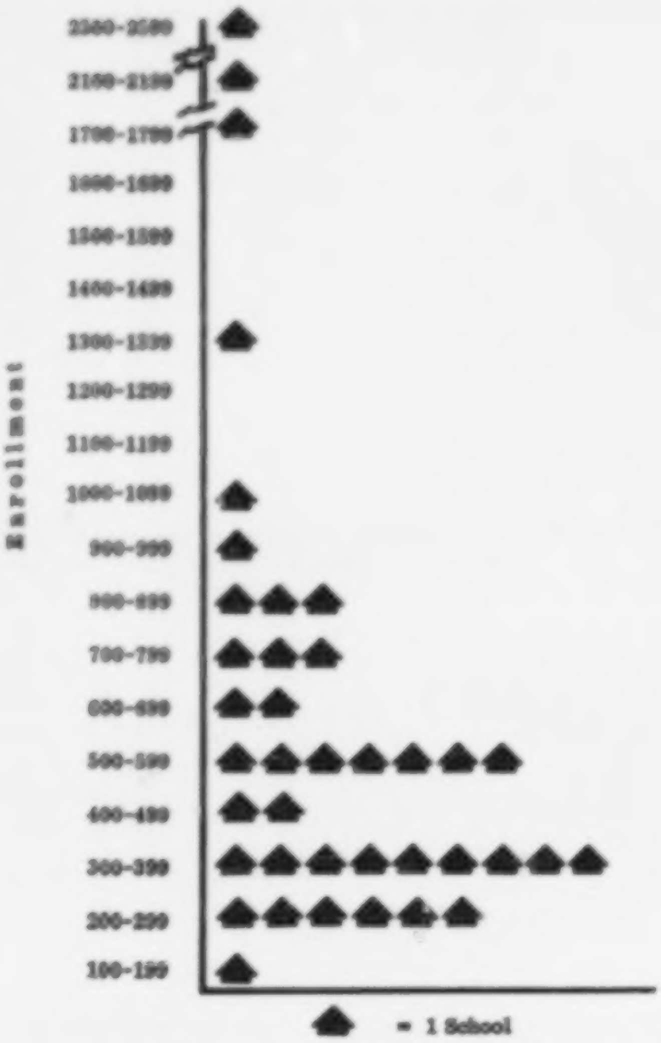

Fig. 3. Distribution of 1958-59 Total Net Enrollment in 39 Reorganized Districts of Wisconsin

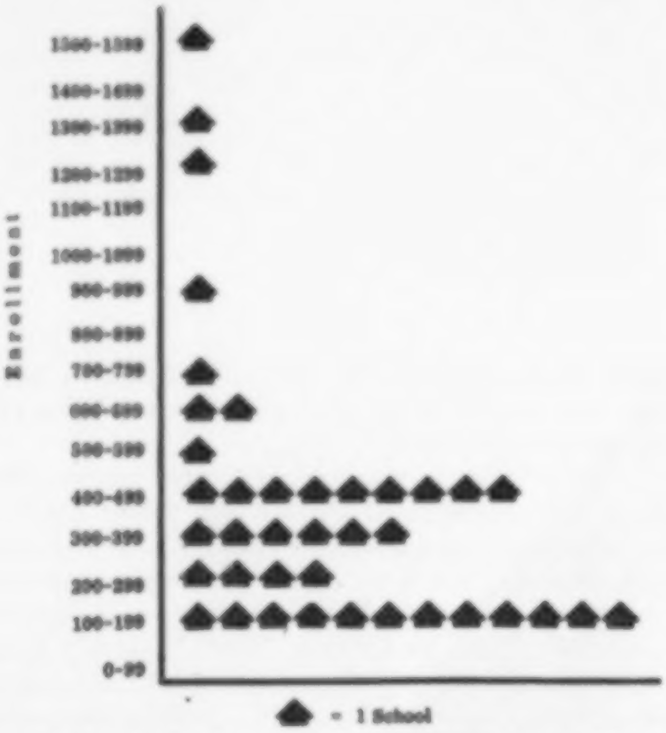

Fig. 4. Distribution of 5-Year Average 1954-58 Net Enrollment in Elementary Schools in 39 Reorganized Districts of Wisconsin

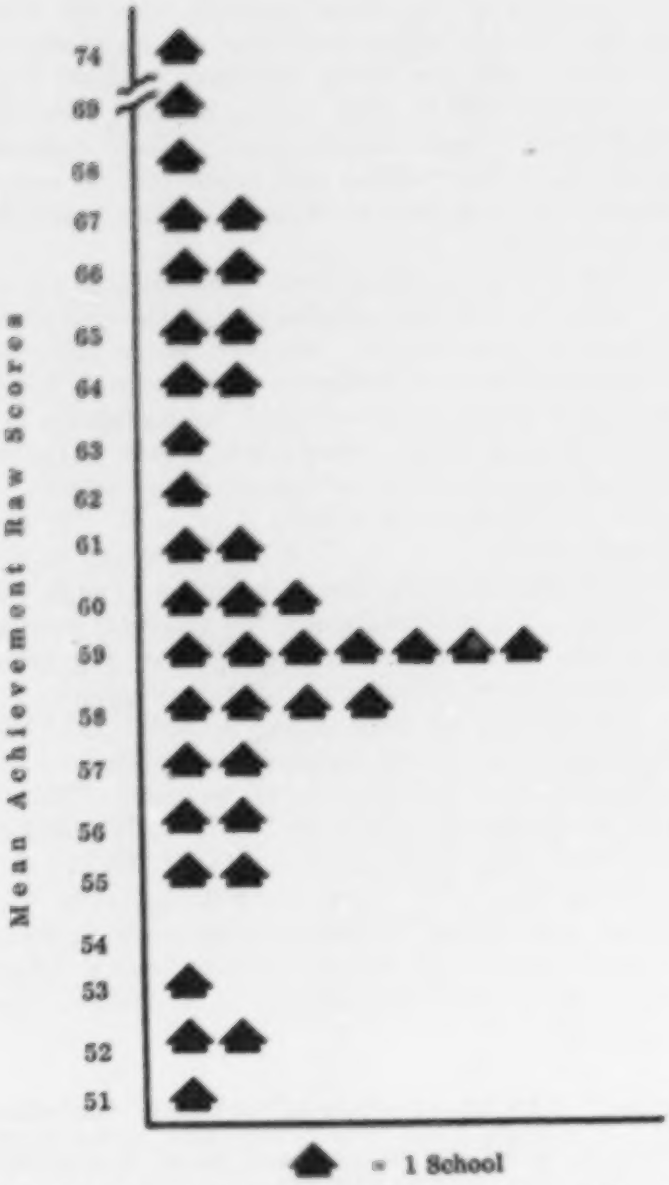

Fig. 5. Distribution of Mean Achievement Scores in Reading and Mathematics for 39 Reorganized School Districts of Wisconsin

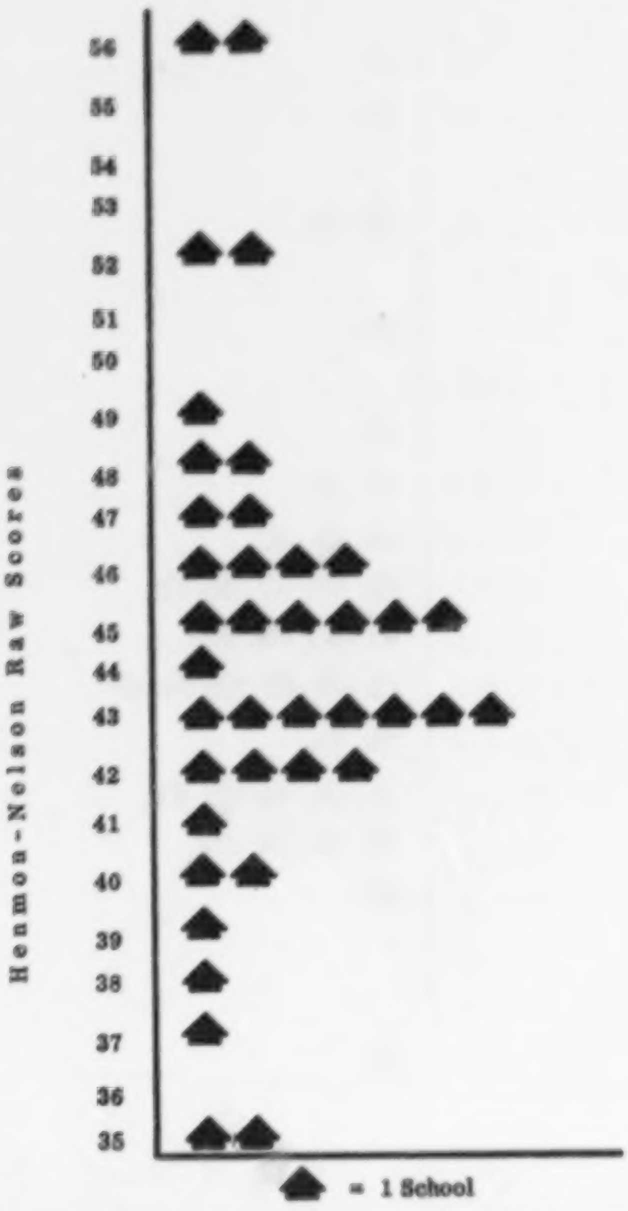

Fig. 6. Distribution of Mean Henmon-Nelson Raw Scores for 39 Reorganized School Districts of Wisconsin

achievement tests and the small schools had the lowest mean achievement.

A sign test applied to the mean raw achievement scores for each school in each group failed to show significant difference between any of the three possible combinations of pairs (Large and small, medium and small, or large and medium).

Analysis of Variance applied to the data found in Table XXXV yielded an F-ratio of 1.00. Observed differences among the various means of the three different size groups were not significant, and the hypothesis H_{3s} was accepted. A summary of the sums of squares, degrees of freedom, mean squares, and F-ratio appears in Table XXXV.

TABLE XXXV.—Analysis of Variance for Mean Achievement Scores Among Large, Medium, and Small Schools

Source of Variation	Sum of Squares	d. f.	Mean Squares	F-Ratio
Between	734	2	367	1.00
Within	343,028	1309	367	NS
Total	343,762	1311	262	...

Among the students attending the 39 schools in this related study, the Minnesota Occupational Rating Scale was used to determine the parents' occupation. Analysis of these data showed that the largest single occcupational group was that of farmer, with a total of 406. The large schools had 169, medium 134, and small 103 students whose fathers were engaged in farming. It was believed that, while there are individual differences among farmers as among any other occupational group, using only the students with farm backgrounds would give a more homogenous group with which to study the effect of size and achievement. Students from farm backgrounds were chosen because they made up the largest single occupational group,

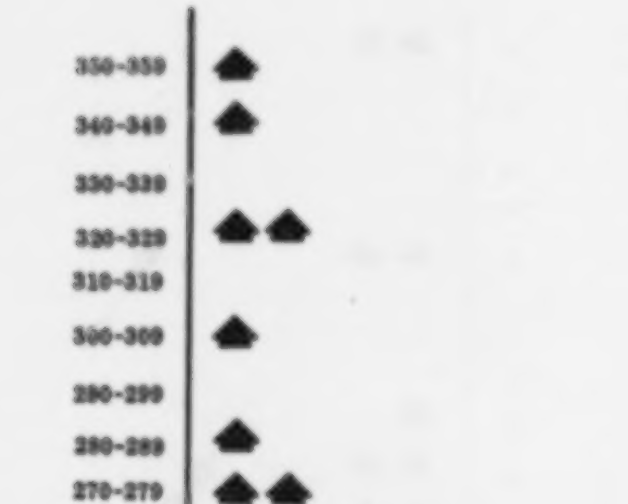

Fig. 7. Distribution of Per Pupil Expenditures for the 39 Reorganized School Districts of Wisconsin

they were the most representative of the population being studied, and because reorganization has been primarily a rural problem. In order to obtain three groups of equal size, 100 farm students were chosen randomly from each of the three size groups.

Table XXXVI summarizes the mean achievement and intelligence test raw scores of these 300 farm students, as well as these scores for all of the students involved. There is a slight difference in the pattern of the farm students and the total group. In both achievement test raw score and intelligence test raw score, the farm students from the larger schools show mean scores below the total group mean. In the case of farm students, those from the medium and small schools scored higher on both factors than did those from the large schools.

TABLE XXXVI.—Mean Intelligence and Achievement Scores for All Students and for Farm Students in Large, Medium, and Small Reorganized Districts

Size of Schools	Henmon-Nelson Scores		Achievement Scores	
	All Students	Farm Students	All Students	Farm Students
Large........	45.172	42.29	60.498	57.59
Medium......	44.923	45.74	61.041	63.09
Small........	43.098	44.36	58.940	60.96
Total Mean....	44.397	44.00	60.156	60.546

Before proceeding with the analysis of covariance to test for significance of the preceding differences, coefficients of correlation (Pearson Product-Moment Correlation) were run between the achievement scores of the farm youngsters and their Henmon-Nelson intelligence scores. The following correlations were found: Large schools — r = + .73; Medium schools — r = + .87; and Small schools — r = + .75. According to the Garrett classification, these are extremely high correlations. Considering this to be a normal population, we may assume homogeneity of regression between the two variables for the three groups.

According to information in Table XXXVII, the analysis of covariance gave an F-ratio of 1.417 with two and 296 degrees of freedom. This is not a significant difference. From this finding and from the data found in Table XXXVI hypothesis H_{2j}, "There are no differences in academic achievement among farm students in small, medium, and large enrollment reorganized school communities when intelligence is controlled," was accepted.

TABLE XXXVII.—Analysis of Covariance Controlling Intelligence and Comparing Achievement among Farm Students in Large, Medium, and Small Reorganized Districts

Sources	Residuals	d. f.	Mean Square	F
Variance among Schools	292	2	146	1.417 NS
Variance within Schools	30,374	296	103	
Total Variance........	30,666	298		

Academic Achievement Summary: On the basis of the findings on achievement the following decisions were reached in regard to the first eight subhypotheses listed in this section:

1. Hypothesis H_{2a}, "There are no differences between girls in reorganized and non-reorganized school communities in total academic achievement," rejected.
2. Hypothesis H_{2b}, "There are no differences between boys in reorganized and non-reorganized school communities in total academic achievement," accepted.
3. Hypothesis H_{2c}, "There are no differences between girls in the reorganized and non-reorganized segments of the reorganized school communities in academic achievement," accepted.

4. Hypothesis H_{2d}, "There are no differences between boys in the reorganized and non-reorganized segments of the reorganized school communities in academic achievement," rejected.
5. Hypothesis H_{2e}, "There are no differences between girls in reorganized and non-reorganized school communities in: 1) Reading achievement; 2) Mathematics achievement; and 3) Science achievement," rejected.
6. Hypothesis H_{2f}, "There are no differences between boys in reorganized and non-reorganized school communities in: 1) Reading achievement; 2) Mathematics achievement; and 3) Science achievement," rejected in part 3, but accepted for part 1 and 2.
7. H_{2g}, "There are no differences in academic achievement among students in small, medium, and large enrollment reorganized school communities," accepted.
8. H_{2h}, "There are no differences in academic achievement among farm students in small, medium, and large enrollment reorganized school communities when intelligence is controlled", accepted.

Personal and Social

Sense of Personal Worth: Table XXXVIII shows that boys in non-reorganized communities gave a higher percentage of correct responses to 10 of the 12 items in this section of the California Test of Personality entitled Sense of Personal Worth than did those in the reorganized communities (R. only). Differences were found to be significant at $P \leq .05$ in the case of item 19 and at $P \leq .01$ for items 10 and 18. A test for the significance of difference between two percentages was used as described by Johnson.[2]

The item 10 question is, "Do your friends usually think that your ideas are good?" Item 18 raises the question, "Do your folks seem to think that you are doing well?" The item 19 question is, "Can you do most of the things that you try?"

Responses by girls to these same items, as listed in Table XXXIX, differed considerably from boys'. Girls in non-reorganized districts scored higher than those in reorganized districts on only 4 of the 12 items and none were significant. The girls in the reorganized districts, on the other hand, scored significantly higher than their non-reorganized counterparts on two items — 11 and 17.

Item 11 asked, "Do most of your friends and schoolmates think that they are brighter than you?" And the item 18 question is, "Do your schoolmates and friends usually feel that they know more than you do?"

Feeling of Belonging: Differences in percentages of correct responses to items 22 through 33 are shown in Table XL. Only item 24 was answered as keyed by a larger percentage of boys in reorganized communities than by those from the non-reorganized communities, and this difference was not significant.

Boys from non-reorganized districts had a higher percentage of correct responses on all other items, but only one of these — item 33 — showed a difference that was significant at $P \leq .01$. This item was, "Do your friends have a better time at home than you do?"

Table XLI presents data representing the responses of girls to items indicating a Feeling of Belonging. Girls from the reorganized communities had a higher percentage of keyed responses on five items. None of these differences were significant.

Social Standards: Differences between the percentages of boys in reorganized (R. only) and non-reorganized communities (N.R.) responding correctly to the 12 items in the Social Standards section of the California Test of Personality are re-

TABLE XXXVIII.—Differences between Percentages of Sixth Grade Boys in Reorganized (R Only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Sense of Personal Worth Section of the California Test of Personality

Item Number	Reorganized Communities (R only)		Non-reorganized Communities (NR)		Difference	Difference in favor of	Level of Significance
	N Boys	Percentage Giving Keyed Answers	N Boys	Percentage Giving Keyed Answers			
10	102	60.8	164	79.3	18.5	NR	.01
11	101	55.4	164	64.0	8.6	NR	NS
12	102	68.6	163	72.4	3.8	NR	NS
13	102	64.7	163	71.2	6.5	NR	NS
14	102	86.3	164	87.8	1.5	NR	NS
15	102	87.3	164	87.2	.1	R	NS
16	102	57.8	164	68.3	10.5	NR	NS
17	102	60.8	164	57.9	2.9	R	NS
18	102	76.5	163	88.3	11.8	NR	.01
19	102	86.3	163	94.5	8.2	NR	.05
20	102	60.8	163	62.0	1.2	NR	NS
21	101	91.1	164	93.9	2.8	NR	NS

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[2] Palmer O. Johnson, *Statistical Methods in Research*, New York: Prentice Hall, Inc., 1949, pp. 80-81.

TABLE XXXIX.—Differences between Percentages of Girls in Reorganized (R Only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Sense of Personal Worth Section

Item Number	Reorganized Communities		Non-reorganized Communities		Difference	Difference in favor of	Level of Significance
	N Girls	Percentage Giving Keyed Answers	N Girls	Percentage Giving Keyed Answers			
10	103	79.6	138	78.3	1.3	R	NS
11	103	75.7	138	61.6	14.11	R	.05
12	103	82.5	138	81.2	1.3	R	NS
13	103	84.5	138	79.7	4.8	R	NS
14	103	85.4	137	81.8	3.6	R	NS
15	103	91.3	138	94.2	2.9	NR	NS
16	103	79.6	138	81.2	1.6	NR	NS
17	103	77.7	138	63.0	14.7	R	.05
18	103	92.2	138	92.0	.2	R	NS
19	103	94.2	137	89.8	4.4	R	NS
20	102	75.5	137	76.6	1.1	NR	NS
21	103	85.1	138	87.8	2.7	NR	NS

TABLE XL.—Differences between Percentages of Boys in Reorganized (R Only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Feeling of Belonging Section

Item Number	Reorganized Communities		Non-reorganized Communities		Difference	Difference in favor of	Level of Significance
	N Boys	Percentage Giving Keyed Answers	N Boys	Percentage Giving Keyed Answers			
22	102	93.1	164	95.1	2.0	NR	NS
23	102	87.3	164	90.2	2.9	NR	NS
24	102	77.5	163	75.5	2.0	R	NS
25	102	87.3	161	91.3	4.0	NR	NS
26	100	98.0	163	99.4	1.4	NR	NS
27	102	91.2	164	93.3	2.1	NR	NS
28	102	60.8	163	67.5	6.7	NR	NS
29	100	77.0	162	85.8	8.8	NR	NS
30	102	82.4	161	88.8	6.4	NR	NS
31	102	93.1	164	96.3	3.2	NR	NS
32	102	89.2	164	92.1	2.9	NR	NS
33	100	65.0	161	81.4	16.4	NR	.01

TABLE XLI.—Differences between Percentages of Girls in Reorganized (R Only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Feeling of Belonging Section

Item Number	Reorganized Communities		Non-reorganized Communities		Difference	Difference in favor of	Level of Significance
	N Girls	Percentage Giving Keyed Answers	N Girls	Percentage Giving Keyed Answers			
22	103	97.1	138	92.8	4.3	R	NS
23	103	99.0	138	97.1	1.9	R	NS
24	103	95.1	137	89.8	5.3	R	NS
25	103	94.2	138	89.1	5.1	R	NS
26	103	96.1	138	97.1	1.0	NR	NS
27	103	91.3	138	94.9	3.6	NR	NS
28	103	61.2	138	71.7	10.5	NR	NS
29	101	87.1	137	88.3	1.2	NR	NS
30	103	83.5	138	86.2	2.7	NR	NS
31	103	94.2	138	95.7	1.5	NR	NS
32	102	94.1	137	96.4	2.3	NR	NS
33	101	85.1	137	84.7	.4	R	NS

TABLE XLII.—Differences between Percentages of Boys in Reorganized (R Only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Social Standards Section

Item Number	Reorganized Communities		Non-reorganized Communities		Difference	Difference in favor of	Level of Significance
	N Boys	Percentage Giving Keyed Answers	N Boys	Percentage Giving Keyed Answers			
34	102	53.9	162	54.3	.4	NR	NS
35	102	73.5	163	74.8	1.3	NR	NS
36	101	75.2	163	68.7	6.5	R	NS
37	100	91.0	164	92.7	1.7	NR	NS
38	102	96.1	163	93.3	2.8	R	NS
39	102	91.2	163	90.2	1.0	R	NS
40	102	82.4	163	87.2	4.8	NR	NS
41	101	87.1	163	91.4	4.3	NR	NS
42	102	94.1	163	96.3	2.2	NR	NS
43	101	87.1	163	92.0	4.9	NR	NS
44	101	90.3	163	92.8	2.5	NR	NS
45	102	96.1	163	95.1	1.0	R	NS

ported in Table XLII. Only four of the items, 36, 38, 39, and 45, were answered correctly more often by boys in the reorganized communities.

None of the differences between percentages found in Table XLII were significant, regardless of whether they favored boys from reorganized communities or those attending schools in the non-reorganized communities.

Girls from the reorganized communities (R. only) responded correctly to a higher percentage of the questions in one-half of the items in this section of the test. These items were 35, 37, 39, 40, 42, and 45. Table XLIII indicates that only in item 37 was the difference between the percentages significant at P ≦ .01. This item was, "Is it all right to take things you need without paying for them, if you have no money?"

Social Skills: The percentage of correct response by boys from reorganized and non-reorganized school communities, and differences between these percentages, are found in Table XLIV. Items 46, 50, 53, and 56 were answered correctly by a higher percentage of boys from reorganized communities, but none of these differences were significant.

Significant differences (P ≦ .05) were found to exist between boys in non-reorganized and reorganized communities on items 52 and 57. For these two items, a higher percentage of the boys from non-reorganized communities responded correctly than boys from reorganized communities. (Item 52 asked, "Do you usually act friendly to people you do not like?" Item 57 asked, "Do you talk to new boys and girls at school?")

Table XLV shows the percentage of girls in the two types of communities who answered the items of the Social Skills section correctly. In this section of the test, the girls from reorganized communities had a higher percentage of correct scores on only five items and none of these were significant.

Of the items more frequently answered correctly by girls in non-reorganized communities, only item 47 had a significant difference at P ≦ .05. This item asked, "Do you usually keep from showing your temper when you are angry?"

Community Relations: Percentages of correct responses in the Community Relations section by boys from reorganized and non-reorganized communities are summarized in Table XLVI. Again few items — 59, 61, 63, and 66 — were answered by a higher percentage of boys in reorganized communities, and none of the differences were significant.

Eight items were answered correctly by a higher percentage of the boys from non-reorgan-

TABLE XLIII.—Differences between Percentages of Girls in Reorganized (R Only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Social Standards Section

Item Number	Reorganized Communities		Non-reorganized Communities		Difference	Difference in favor of	Level of Significance
	N Girls	Percentage Giving Keyed Answers	N Girls	Percentage Giving Keyed Answers			
34	100	53.0	137	59.9	6.9	NR	NS
35	103	87.4	137	79.6	7.8	R	NS
36	103	77.7	138	79.7	2.0	NR	NS
37	101	99.0	138	88.4	10.6	R	.01
38	103	97.09	138	97.10	.01	NR	NS
39	103	96.1	138	95.7	.4	R	NS
40	102	95.1	138	92.0	3.1	R	NS
41	103	92.2	138	94.9	2.7	NR	NS
42	103	97.1	138	96.4	.7	R	NS
43	103	97.09	138	97.10	.01	NR	NS
44	103	90.3	138	94.9	4.6	NR	NS
45	103	99.0	138	95.7	3.3	R	NS

TABLE XLIV.—Differences between Percentages of Boys in Reorganized (R Only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Social Skills Section

Item Number	Reorganized Communities		Non-reorganized Communities		Difference	Difference in favor of	Level of Significance
	N Boys	Percentage Giving Keyed Answers	N Boys	Percentage Giving Keyed Answers			
46	102	59.8	158	53.2	6.6	R	NS
47	102	58.8	158	60.1	1.3	NR	NS
48	101	76.2	160	81.3	5.1	NR	NS
49	102	81.4	162	88.3	6.9	NR	NS
50	102	63.7	163	57.7	6.0	R	NS
51	101	90.1	161	92.8	2.7	NR	NS
52	101	61.4	161	73.3	11.9	NR	.05
53	101	83.2	159	81.8	1.4	R	NS
54	102	44.1	163	52.8	8.7	NR	NS
55	100	80.1	156	85.9	5.9	NR	NS
56	102	94.1	162	92.6	1.5	R	NS
57	102	88.2	163	96.3	8.1	NR	.05

TABLE XLV.—Differences between Percentages of Girls in Reorganized (R Only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Social Skills Section

Item Number	Reorganized Communities		Non-reorganized Communities		Difference	Difference in favor of	Level of Significance
	N Girls	Percentage Giving Keyed Answers	N Girls	Percentage Giving Keyed Answers			
46	102	66.7	137	75.2	8.5	NR	NS
47	101	63.4	138	75.4	12.0	NR	.05
48	102	87.3	137	91.2	3.9	NR	NS
49	103	93.2	138	94.9	1.7	NR	NS
50	103	64.4	137	56.9	7.5	R	NS
51	101	97.1	138	98.9	1.5	NR	NS
52	102	80.4	137	78.8	1.6	R	NS
53	102	84.3	138	84.8	.5	NR	NS
54	101	66.3	137	56.9	9.4	R	NS
55	100	90.0	137	89.8	.2	R	NS
56	102	97.1	138	91.3	5.8	R	NS
57	102	96.1	138	98.6	2.5	NR	NS

TABLE XLVI.—Differences between Percentages of Boys in Reorganized (R Only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Community Relations Section

Item Number	Reorganized Communities		Non-reorganized Communities		Difference	Difference in favor of	Level of Significance
	N Boys	Percentage Giving Keyed Answers	N Boys	Percentage Giving Keyed Answers			
58	102	78.4	163	79.1	.7	NR	NS
59	102	95.1	165	91.4	3.7	R	NS
60	102	44.1	161	50.9	6.8	NR	NS
61	102	99.0	164	98.2	.8	R	NS
62	102	89.2	162	96.3	7.1	NR	.05
63	102	98.0	162	96.9	1.1	R	NS
64	101	88.1	165	92.0	3.9	NR	NS
65	102	80.4	162	94.4	14.0	NR	.01
66	102	84.3	162	82.1	2.2	R	NS
67	102	93.1	164	96.3	3.2	NR	NS
68	102	93.1	162	97.5	4.4	NR	NS
69	102	88.2	160	91.3	3.1	NR	NS

TABLE XLVII.—Differences between Percentages of Girls in Reorganized (R Only) and Non-reorganized Communities (NR) Giving Keyed Answers on the Community Relations Section

Item Number	Reorganized Communities		Non-reorganized Communities		Difference	Difference in favor of	Level of Significance
	N Girls	Percentage Giving Keyed Answers	N Girls	Percentage Giving Keyed Answers			
58	100	76.0	138	77.5	1.5	NR	NS
59	102	98.0	138	95.7	2.3	R	NS
60	102	49.0	138	58.7	9.7	NR	NS
61	102	96.1	138	97.1	1.0	NR	NS
62	102	93.1	138	94.2	1.1	NR	NS
63	102	99.0	138	97.8	1.2	R	NS
64	102	90.2	138	92.0	1.8	NR	NS
65	102	90.2	137	92.7	2.5	NR	NS
66	101	85.2	138	79.7	5.5	R	NS
67	102	99.0	138	96.4	2.6	R	NS
68	102	100.0	137	97.8	2.2	R	NS
69	100	96.0	137	92.7	3.3	R	NS

ized communities. Two of these had differences significantly different from zero. The difference existing between the two groups for item 62 was significant at P ≦ .05, while the difference noted for item 65 was significant at P ≦ .01.

Item 62 was, "Do you take good care of your own pets or help with other people's pets?" Item 65 asked, "Do you help children keep away from places where they might get sick?"

Girls from the reorganized communities had a higher percentage of correct responses to more items in this section than did boys from the same schools — six for girls compared to four for the boys. Table XLVII shows that none of the existing differences were of great enough magnitude to be statistically significant.

Total Scores: Table XLVIII shows the sums of squares and mean squares between and within groups and the value of F for an analysis of variance test of total personal and social behavior scores for boys and girls in reorganized and non-reorganized school communities. The F Table shows that, for three and 348 degrees of freedom, a value of F = 3.48 will indicate differences from zero at P ≦ .01. Hence, the F value of 14.17 obtained from the four groups indicates a difference significant at P ≦ .01.

Analysis of variance reveals a difference in the means of the four groups. However, before concluding that the variation of the means of the four groups causes the highly significant value of F, it is necessary to look for homogeneous variances within the groups.

TABLE XLVIII.—Analysis of Variance of Total California Test of Personality Scores for Boys and Girls in Reorganized (R Only) and Non-reorganized School Communities (NR)

Source of Variation	Sum of Squares	d. f.	Mean Square	F
Between Groups	1,454	3	484.77	14.17ᵃ
Within Groups	11,932	348	34.29	----
Total	13,386	----	----	----

ᵃSignificant at P ≤ .01

Norton[3] studied the effect of non-normality and heterogeneity of variances upon the F-distribution.

Lindquist.[4] commented on Norton's study:

> While statistical tests of heterogeneity of variance are available . . . . there will be relatively few situations in which any such test is required. In general, unless the heterogeneity of either form or variance is so extreme as to be readily apparent upon inspection of the data, the effect upon the F-distribution will probably be negligible. In general, when the heterogeneity in form or variance is "marked" but not "extreme", allowance may be made for this fact by setting a higher "apparent" level of significance for the tests of treatments than would otherwise be employed.

The apparent heterogeneity of variances of the sample population affected the F-distribution so little that it was unnecessary to select new levels of significance. The level, P ≦ .05, was maintained to denote differences significantly different from zero.

Table XLIX presents the sums of squares, mean squares and F-scores for a complete ANOVA of the four groups, boys and girls in reorganized and non-reorganized school communities. The values of F in Table XLIX are based on 1 and 348 degrees of freedom. For these degrees of freedom, an F value of 3.87 denotes a significant difference at P ≦ .05, and 6.72 denotes significance at P ≦ .01.

TABLE XLIX.—Complete Analysis of Variance of Total California Test of Personality Scores for Boys and Girls in Reorganized (R Only) and Non-reorganized School Communities (NR)

Source of Variation	Sum of Squares	d. f.	Mean Square	F
Reorganized—	----	----	----	----
Non-Reorganized	144	1	144	4.199ᵃ
Boys-Girls	1,152	1	1,152	33.596ᵇ
Interaction: R – NR X B – G	158	1	158	4.068ᵃ
Within Groups	11,932	348	34.29	----
Total	13,386	351	----	----

ᵃ Significant at P ≤ .05
ᵇ Significant at P ≤ .005

From the F values noted in Table XLIX, the differences found between the reorganized and non-reorganized groups and for the interaction are significant at P ≦ .05. The difference between boys and girls with an F value of 33.596 denotes significance at P ≦ .005. At this value of F, differences found between boys and girls would occur at least 995 times in 1,000.

These differences between personal and social adjustment scores of boys and girls have been observed by other investigators. Their presence in this study lends reliability to the measures used.

Table L shows clearly the differences between boys and girls in the specific aspects measured in this study. The total number of differences between boys in the two types of districts is 230, with the non-reorganized group scoring higher. The differences between the girls is five, with the reorganized girls scoring higher.

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[3] Dee W. Norton, "An Empirical Investigation of Some Effects of Non-Normality and Heterogeneity on the F-Distribution." Unpublished Doctor's Dissertation, State University of Iowa, Iowa City, Iowa, 1952.

[4] E. F. Lindquist, *Design and Analysis of Experiments in Psychology and Education*, Houghton Mifflin Co., Boston, 1956, p. 86.

TABLE L.—Sums of Scores on California Test of Personality Achieved by Boys and Girls in Reorganized (R Only) and Non-reorganized School Communities (NR)

Sex	Type of School District		Difference R minus NR
	Reorganized	Non-reorganized	
Boys	4083	4313	−230
Girls	4519	4514	+5
Difference B-G	− 436	− 201	...

TABLE LI.—Summary of Differences between Boys and Girls in Reorganized (R Only) and Non-reorganized Communities (NR) on Individual Items of the California Test of Personality

Test Section	No. of Items	Boys No. of Differences in Favor of		No. of Items	Girls No. of Differences in Favor of	
		R	NR		R	NR
Sense of Personal Worth	12	2	10	12	8	4
Feeling of Belonging	12	1	11	12	5	7
Social Standards	12	4	8	12	6	6
Social Skills	12	4	8	12	5	7
Community Relations	12	4	8	12	6	6
	60	15	45	60	30	30

When a sign test was applied to the data in Table LI, the null hypothesis, H_{21}, "There are no differences among the means of scores on sections and total scores of the California Test of Personality achieved by boys and girls in reorganized and non-reorganized school communities," could be rejected for the boys at $P \leqq .01$. Because there were an equal number of differences for the girls, the hypothesis was accepted.

However, Table LII shows that when ANOVA was applied to these data, significant differences among the four groups (boys and girls in reorganized and non-reorganized districts) were found in all five sub-tests of the California Test of Personality.

TABLE LII.—Summary of F Ratios Obtained by an Analysis of the Variance between and Within Four Groups (Boys and Girls in Reorganized [R Only] and Non-reorganized Communities [NR])

Source of Variation	Sum of Squares	d. f.	Mean Square	F
Sense of Personal Worth				
Between Groups	158	3	53.67	12.202[b]
Within Groups	1526	348	4.39	----
Feeling of Belonging				
Between Groups	47	3	15.67	6.074[b]
Within Groups	897	348	2.58	----
Social Standards				
Between Groups	34	3	11.33	6.365[b]
Within Groups	621	348	1.78	----
Social Skills				
Between Groups	100	3	33.33	8.912[b]
Within Groups	1303	348	3.74	----
Community Relations				
Between Groups	17	3	5.67	2.849[a]
Within Groups	693	348	1.99	----

[a] Significant at $P \leq .05$
[b] Significant at $P \leq .01$

However, differences existing between sexes may account for significance at the given probabilities. Therefore, this finding will not be considered in making a decision of accepting or rejecting hypothesis H_{21}.

Data for each sub-test and the total battery were tested separately for boys and for girls between the two types of school communities. Table LIII shows significant differences only for boys in total battery scores, and in Sense of Personal Worth and Community Relations sections. The F value obtained for the total California Test of Personality score shows a significant difference at $P \leqq .01$. For both Sense of Personal Worth and Community Relations scores, the differences were significant at $P \leqq .05$.

On the basis of this test, hypothesis H_{21} was rejected for boys for Total Score and for Sense of Personal Worth and Community Relations. It was accepted for the other items.

TABLE LIII.—Summary of F Values Obtained by the Analysis of Variance of Total Test Section Scores of the California Test of Personality for Boys and Girls in Reorganized (R Only) and Non-reorganized School Communities (NR)

	Value of F	
	Boys	Girls
Total Scores	6.928[b]	.396
Sense of Personal Worth	5.695[a]	2.991
Feeling of Belonging	3.587	.552
Social Standards	1.163	1.006
Social Skills	2.483	.377
Community Relations	5.187[a]	.537

[a] Significant at $P \leq .05$
[b] Significant at $P \leq .01$

Pearson Product-Moment Correlations were calculated between all available scores on the California Test of Personality and factors often associated with personal and social adjustment. The correlations were calculated for four groups: boys in reorganized communities (R. only), boys in non-reorganized communities (N.R.), girls in reorganized communities (R. only), and girls in non-reorganized communities (N.R.). Factors with which scores on the California Test of Personality were correlated are: socio-economic status, social qualities (ratings by teachers at both grade one and grade six), and emotional stability (ratings by teachers at both grade one and grade six).

All correlations were categorized according to Garrett's Classification.[5] A correlation from .00 to ± .20 was considered a negligible relationship; ± .20 to ± .40, a low relationship; ± .40 to ± .70, a marked relationship; ± .70 to ± 1.00, a high to very high relationship.

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[5] Henry E. Garrett, *Statistics in Psychology and Education*, Longman's Green and Co., New York, 1947, p. 333.

The central concern in determining these relationships was whether to test the null hypotheses that had been rejected by another means. Of the correlation coefficients calculated, most were negligible. A low, but sufficient relationship existed between certain factors to perform an analysis of covariance.

This analysis determined whether the differences observed between the two groups on Sense of Personal Worth and Community Relations scores remained significant without the influence of three selected variables. These independent variables, thought to influence the personal and social adjustments of boys and girls or the ways in which they respond to the items of the California Test of Personality, are: (1) Sewell socio-economic status scores, (2) first grade teacher ratings of students' social qualities, and (3) first grade teacher ratings of students' emotional stability. The means of the scores achieved on the sections of the California Test of Personality are the dependent variables.

With 1 and 174 degrees of freedom, F values of at least 3.90 denote significance at $P \leqq .05$ and 6.786, significance at $P \leqq .01$.

See Table LIV for an analysis of covariance between scores on Sense of Personal Worth without the influence of first grade Sewell socio-economic status scores.

The F value equaled 6.600. Differences between the means achieved on the Sense of Personal Worth section by boys in reorganized and non-reorganized communities were significant at $P \leqq .05$, when the socio-economic status of the two groups is taken into account. The F value is almost 6.786 (which would denote significance at $P \leqq .01$). The F value obtained by the analysis of covariance is greater than the F value (5.695) obtained by the analysis of variance between the two groups.

The socio-economic status score for boys in non-reorganized communities is 69.057, while first grade boys in reorganized communities scored 72.045. The mean of the Sense of Personal Worth scores for boys in non-reorganized communities is 9.250. For boys in reorganized communities, it is 8.443. Socio-economic status differences accentuated the superiority of the scores on the Sense of Personal Worth section for boys in non-reorganized communities.

Hypothesis H_{2a}, "There is no difference between the means of the Sense of Personal Worth scores achieved by boys in reorganized and non-reorganized school communities when the influence of socio-economic status is held constant," was rejected.

Table LIV also shows the results of the analysis of covariance between scores on Sense of Personal Worth with the influence of first grade teacher ratings of students' social qualities removed.

TABLE LIV.—Summary of F Values Obtained by the Analysis of Co-Variance of Sense of Personal Worth and Community Relations Scores between Boys in Reorganized (R Only) and Non-reorganized School Communities (NR) with Influence of Selected Variables Removed

Independent Variables	Sense of Personal Worth	Community Relations
First Grade Socio-Economic Status	6.600*	5.784*
First Grade Teacher Rating of Social Qualities	5.702*	5.721*
First Grade Teacher Rating of Emotional Stability	4.915*	3.793

*Significant at $P \leq .05$

The F value of 5.702 denotes the differences between the means of the Sense of Personal Worth scores significant at $P \leqq .05$, when the first grade teacher ratings of social qualities are taken into account for boys in reorganized and non-reorganized communities.

Hypothesis H_{2b}, "There is no difference between the means of the Sense of Personal Worth scores achieved by boys in reorganized and non-reorganized communities when the influence of first grade teacher ratings of social qualities are held constant," is rejected.

Table LIV shows the results of the analysis of covariance between the means of Sense of Personal Worth with the influence of the first grade teachers' rating of students' emotional stability removed.

The F value of 4.915 which is obtained is interpreted to mean that the differences between the means of scores on the Sense of Personal Worth section achieved by boys in reorganized and non-reorganized districts remains significant at $P \leqq .05$ when the first grade teacher ratings of the emotional stability of the boys is taken into account.

Hypothesis H_{3b}, which states that there is no difference between the means of the scores achieved on the Sense of Personal Worth section of the California Test of Personality by boys in reorganized and non-reorganized communities when the influence of the first grade teacher ratings of emotional stability are held constant, is rejected.

Table LIV shows the results of the analysis of covariance between the means of Community Relations scores with the influence of the first grade socio-economic status scores removed.

The F value of 5.784 indicates that the differences between the means of the scores achieved by boys on the Community Relations section are significant at $P \leqq .05$ when the differences in socio-economic status are considered. The first grade Sewell socio-economic status score mean for boys in reorganized communities is 72.045. For boys in non-reorganized communities it is 69.057.

Hypothesis H_{2b}, which states that there is no difference between the means of the scores achieved by boys in reorganized and non-reorganized communities on the Community Relations section of the California Test of Personality when the influence of first grade socio-economic status is held constant, is rejected.

Table LIV shows the results of the analysis of covariance between the means of the Community Relations scores with the influence of first grade teacher ratings of students' social qualities removed.

The F value of 5.721 which is obtained by this means that the differences between the means of the scores on the Community Relations section of the California Test of Personality is significant at $P \leqq .05$ when the first grade teacher ratings of students' social qualities are taken into account. The teacher ratings of boys in non-reorganized communities were slightly higher in social qualities.

Hypothesis H_{2b}, which states that there is no difference between the means of the scores achieved by boys in reorganized and non-reorganized districts on the Community Relations section of the California Test of Personality when the first grade teacher ratings of students' social qualities are taken into account, is rejected.

Table LIV also shows the results of the analysis of covariance between the means of Community Relations scores with the influence of the first grade teacher ratings of students' emotional stability removed.

The F value of 3.793 which is obtained by this analysis does not denote significance. The difference between the means of the scores achieved by boys in the two kinds of districts on the Community Relations section is therefore not significant when the influence of the first grade teacher ratings of emotional stability is taken into account.

Hypothesis H_{2b}, "There is no difference between the means of the scores achieved by boys in reorganized and non-reorganized districts on the Community Relations section of the California Test of Personality when the first grade teacher ratings of students' emotional stability is taken into account," was accepted.

Since no significant differences had been found between the two groups of girls in any previous tests, their scores were not subjected to this test, and hypothesis H_{2b} was accepted for girls.

Personal and Social Achievement Summary: There were no differences between sixth grade girls in reorganized and non-reorganized communities on personal and social factors measured by revised portions of the California Test of Personality. Differences favorable to boys in non-reorganized communities on Total Score, Sense of Personal Worth and Community Relations were identified. These differences were significant and remained so for Total Score ($P \leqq .01$) and Sense of Personal Worth ($P \leqq .05$) when analysis of covariance was used to remove the influence of other selected variables: first grade teacher rating of emotional stability, rating of social qualities and the socio-economic status of the family.

In testing the hypothesis and its sub-hypotheses the following differences were found in achievement:

Girls, reorganized (R. only) vs. non-reorganized (N.R.), (higher mean scores in favor of reorganized):

1. Reading — $P \leqq .05$.
2. Arithmetic Fundamentals — $P \leqq .01$.
3. Arithmetic Problem Solving — $P \leqq .05$.
4. Literature — $P \leqq .05$.
5. Science — $P \leqq .01$.
6. Total Achievement — $P \leqq .05$.

Boys, reorganized (R. only) vs. non-reorganized (N.R.), (higher mean scores in favor of reorganized):

1. Science — $P \leqq .05$.

Girls, reorganized (R. only) vs. non-reorganized part (N.R. part) of the reorganized communities:

No significant differences; and in the case of vocabulary, total English, literature, and spelling, the differences between the mean scores favored the non-reorganized group.

Boys, reorganized (R. only) vs. non-reorganized part (N.R. part) of the reorganized communities, (higher mean scores in favor of reorganized):

1. Arithmetic Fundamentals — $P \leqq .05$.
2. Geography — $P \leqq .05$.
3. Science — $P \leqq .05$.
4. Spelling — $P \leqq .01$.
5. Total Achievement — $P \leqq .05$.

In addition to the above findings, a cross-sectional study of 39 reorganized school districts revealed no significant differences in academic achievement at the ninth grade level. By the same token, no significant differences were found in academic achievement among farm students in different size reorganized schools when intelligence was controlled.

Personal and Social Factors:

Girls, reorganized (R. only) vs. non-reorganized (N.R.):

No significant differences were found to exist.

Boys, reorganized (R. only) non-reorganized (N.R.), (higher mean scores in favor of non-reorganized):

1. Sense of Personal Worth — $P \leq .05$.
2. Community Relations — $P \leq .05$.
3. Total Score — $P \leq .01$.
4. Sense of Personal Worth with 1st grade Socio-Economic Status controlled — $P \leq .05$.
5. Community Relations with 1st grade Socio-Economic Status controlled — $P \leq .05$.
6. Sense of Personal Worth with 1st grade Social Qualities (Teacher Rating) controlled — $P \leq .05$.
7. Community Relations with 1st grade Social Qualities (Teacher Rating) controlled — $P \leq .05$.
8. Sense of Personal Worth with 1st grade Emotional Stability (Teacher Rating) controlled — $P \leq .05$.
9. Community Relations with 1st grade Emotional Stability (Teacher Rating) controlled — not significant.

On the basis of the total findings, hypothesis H_{o2}, "There are no differences between reorganized and non-reorganized school communities in boys' and girls' academic achievement and personal and social adjustment" is rejected in part. It is rejected for:

1. Differences in academic achievement of girls in the two types of districts.
2. Differences in science achievement of boys in the two types of districts.
3. Differences in academic achievements of boys in the reorganized part of the reorganized community and those in the non-reorganized districts of the reorganized communities.
4. Differences between boys from the two types of districts on Sense of Personal Worth and Total Personal-Social Score.

In all other cases considered this hypothesis is accepted.

Expenditures

Basic Study

One of the arguments for reorganizing several smaller districts into one large district is that the tax levy will be less. Reasons given for this lightened tax load are: larger base of assessed evaluation, increased state aids, increased efficiency of operation, volume buying, etc. Some of these reasons may be valid. However, when districts combine, the actual tax levy will decrease for residents in only part of the dissolved districts. On the other hand, opponents of reorganization say it will cost more and will actually increase everyone's taxes. They point to the need for new buildings, additional buses, and the like as reasons. Which most nearly represents the reorganized situation?

This question and the disparate arguments connected with it prompted the investigator to incorporate a study of expenditures into the longitudinal research. Cost data relates to the major hypothesis H_{o3}, "There are no differences in educational expenditures between reorganized and non-reorganized school communities."

Figures 8 and 9 compare the instructional expenditures, boys' mean achievement raw scores, and girls' mean achievement raw scores for each of the ten communities in the study. Also included are the figures for the total reorganized (R. total) and non-reorganized communities (N.R.).

Considering each point of mean achievement raw score as one "achievement unit," the *instructional* expenditure per achievement unit was exactly equal for reorganized communities and for non-reorganized communities — 49 cents per unit. (In hypothesis H_{3b} which follows the expenditure is for operations). An increase in instructional costs, up to a point of diminishing returns, should bring about a corresponding increase in academic achievement.

The "t" test of the difference between the means of instructional expenditure for reorganized and non-reorganized communities, and the equality of instructional expenditures per unit of achievement affirm hypothesis H_{3a}. It states, "There are no differences in instructional cost per unit of achievement between reorganized and non-reorganized school communities."

Cross-Sectional Study: Bragg examined the relationships existing among size, expenditure, and achievement of 39 reorganized school districts in Wisconsin.

He found correlations between expenditure and achievement neither significant nor consistent. In order to study these relationships closer, the schools from which farm students came were divided into high, medium, and low expenditure groups. These groups were identified on the basis of operating expenditure per pupil over a five-year period from 1954-58. This division is noted in Table LV. Table LVI shows that students in the medium expenditure schools scored higher achievement means than those in either of the other two groups of schools. A similar pattern occurred among the three groups of schools on their mean Henmon-Nelson intelligence test raw scores. The medium expenditure school group showed the lowest mean five-year enrollment.

An analysis of covariance was applied to the expenditure achievement, and intelligence test data found in Table LVI for three groups of farm students (100 students in each group), identified by the operating expenditure of their schools. The results of this analysis appear in Table LVII.

An F-ratio of .049 was not significant. Apparently, any differences in achievement among

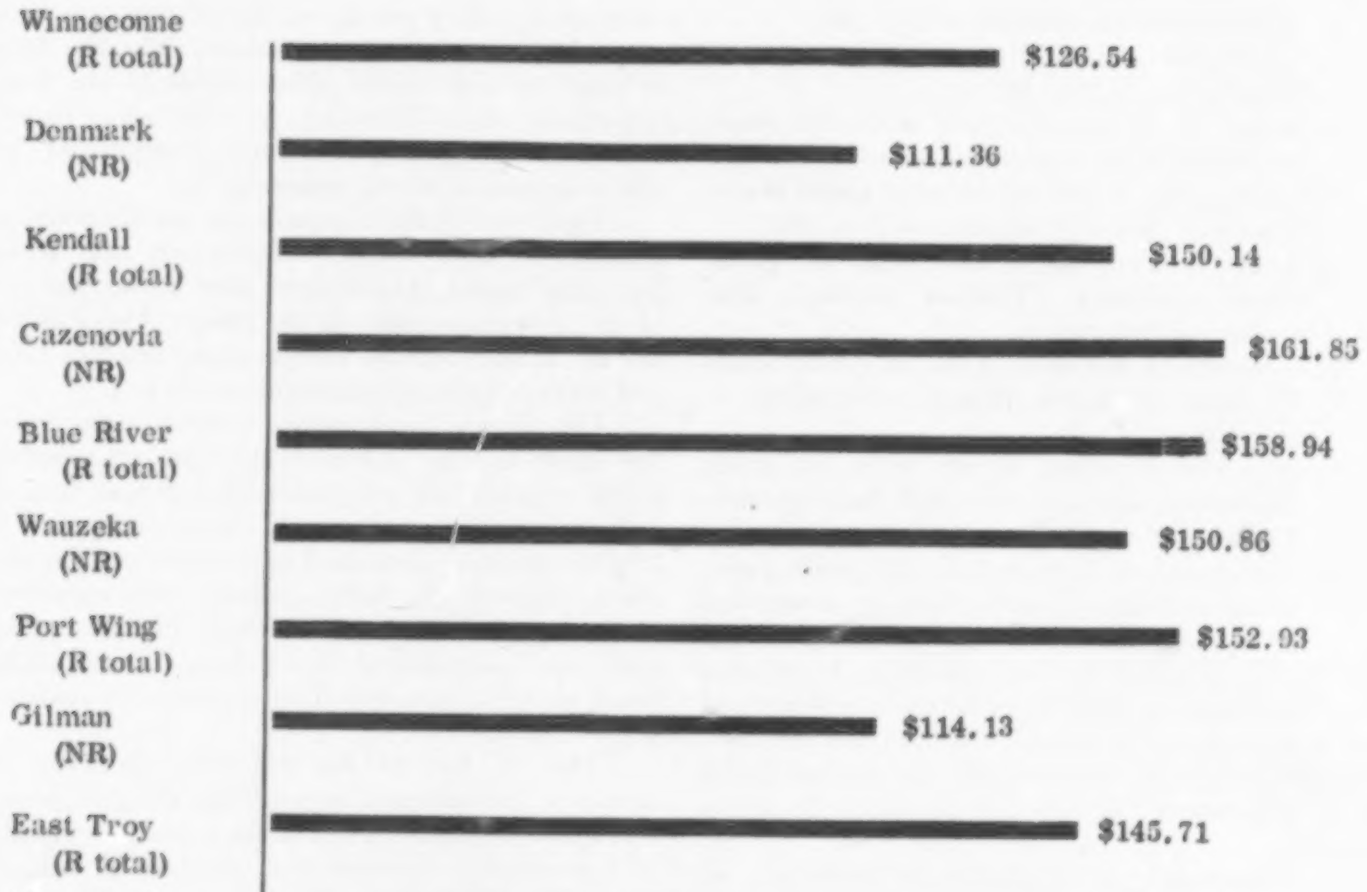

Fig. 8. Mean Expenditure for Instruction Per Pupil at Sixth Grade in 10 Reorganized and Non-reorganized School Communities in Wisconsin

TABLE LV.—Division of 36 Reorganized Districts into High, Medium, and Low Operating Expenditure Schools

High Expenditure Schools N=13	Medium Expenditure Schools N=11	Low Expenditure Schools N=12
Mean Expenditure Per Pupil	Mean Expenditure Per Pupil	Mean Expenditure Per Pupil
$354	$253	$220
345	251	220
324	245	218
309	244	217
285	242	216
278	238	213
271	236	209
267	235	207
262	233	205
260	233	200
259	230	194
254	...	163
254		
Total of Means $3722.00 Mean of Means 286.30	Total $2640.00 Mean 240.00	Total $2482.00 Mean 206.83

farm students from high, medium, and low expenditure schools are due to the intelligence factor or some other factor not identified in this study, and operating expenditure per pupil is not a prime fac-

TABLE LVI.—Summary Data of Size-Expenditure-Achievement and Intelligence Factors Among All Farm Students in High, Medium, and Low Expenditure Reorganized School Districts

Group	Mean Expenditure Per Pupil	Mean Achievement Scores	Mean Henmon-Nelson Scores	Mean 5-Year Enrollment	1A*
High Expenditure	$286.30	58.37	41.54	448	.903
Medium Expenditure	240.00	61.46	44.69	387	.792
Low Expenditure	206.83	59.68	43.10	549	.846

* 1A= Correlation between intelligence (Henmon-Nelson) raw scores and achievement raw scores

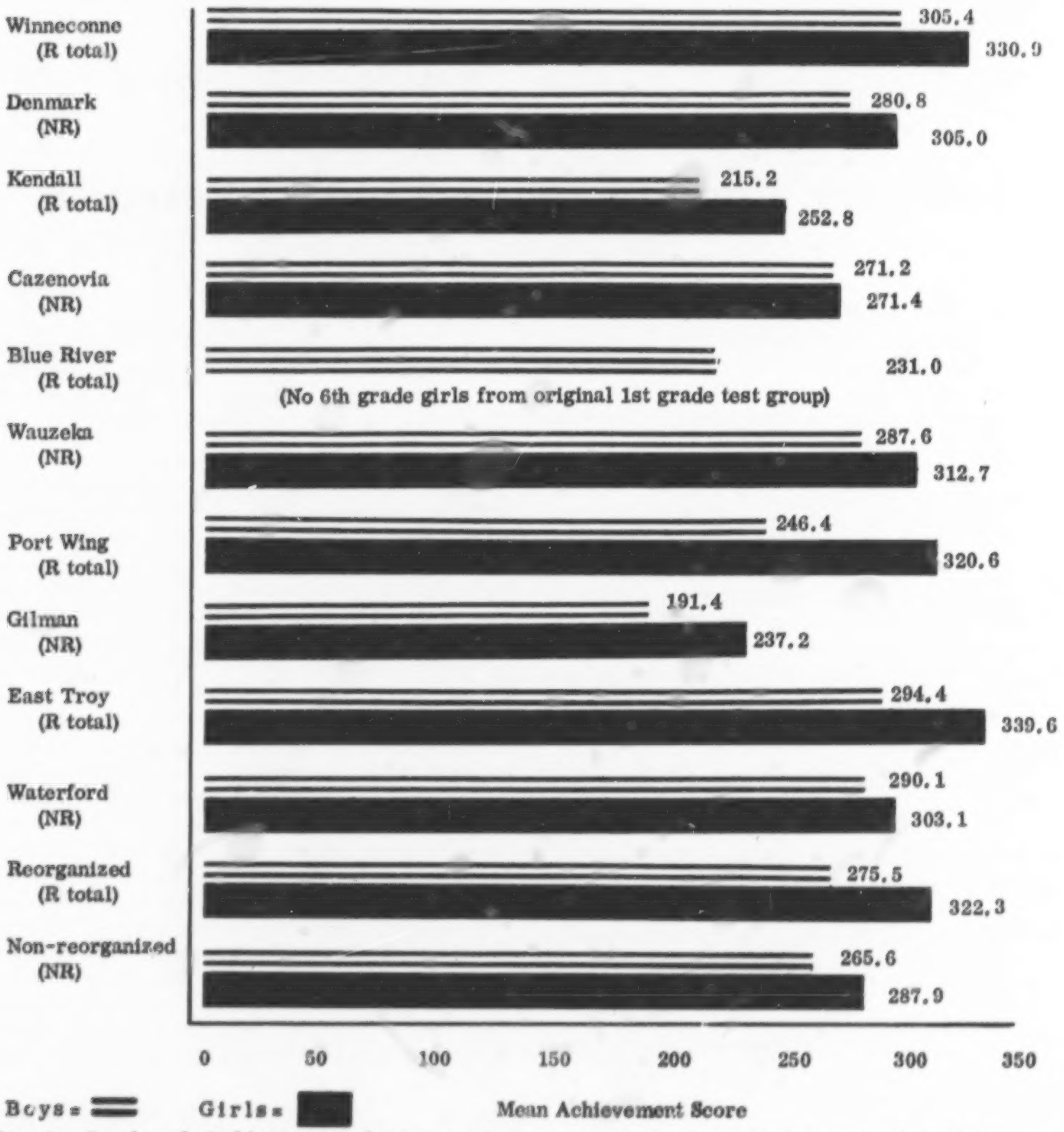

Fig. 9. Boys' and Girls' Mean Achievement Scores at Sixth Grade in 10 Reorganized and Non-reorganized School Communities in Wisconsin

tor in achievement. Information from Table LVII confirms hypothesis H_{3a}, "There are no differences in academic achievement among farm students in high, medium, and low expenditure schools when intelligence is controlled."

Summary: Analysis of the relationships between operating expenditures or instructional expenditures and academic achievement in reorganized and non-reorganized communities showed no significant differences. Also, no significant differences were found in instructional expenditures between the two types of communities. On these bases, hypothesis H_{3b}, "There are no differences between reorganized and non-reorganized school communities in educational expenditures," is accepted.

TABLE LVII.—Analysis of Residuals for the Analysis of Co-Variance between Achievement for Farm Students from High, Medium, and Low Expenditure Schools When Intelligence Is Controlled

Source	Residuals	d. f.	Mean Square	F.
Among Means	1.04	1	....	....
Between Regression	8.96	1	....	....
Among Schools	10.00	2	5.00	.049 NS
Within Schools	29612.00	296	100.04	....
Total	29622.00	298	....	....

Chapter V:

Summary, Conclusions, and Further Research

Summary

FOR THE PAST CENTURY, professional and local educational leaders have been involved in school district reorganization in Wisconsin. In this research, school district reorganization is defined as the combining of two or more school districts into a single district under a common administration operating from either kindergarten or grade one through grade twelve.

School district reorganization in the entire United States has made real progress during the past 15 years. From 1948 through 1960, the number of school districts decreased from 102,000 to 35,000. In spite of this, there were still 24,000 one-room traditionally-organized school districts operating in 1960. Approximately 15,000 were in eight Midwestern states — Nebraska, North and South Dakota, Minnesota, Iowa, Missouri, Wisconsin, and Michigan.

As the school district reorganization movement gained momentum, parents and educators asked, "Does school district reorganization really improve the education provided for boys and girls?" In answer, in 1949 University of Wisconsin research workers began an intensive study of the effects of school district reorganization on the education of boys and girls and on the communities involved in reorganization.

The four basic objectives of the study were:

1. To determine the opportunities provided youngsters attending reorganized and non-reorganized (traditionally-organized) school districts.
2. To determine the academic achievement and intelligence level of boys and girls attending reorganized and non-reorganized school districts and to analyze any noted differences.
3. To determine the relationship between academic achievement of the youngsters and the expenditure for education in reorganized and non-reorganized school districts.
4. To determine the effects of school district reorganization on the farmers' social and economic contacts with the village center.

In 1961, after the findings of 12 years of research had been collected and analyzed, a fifth objective was added. It was:

5. To determine the relative effectiveness of four different media — lecture, bulletin, 16 millimeter sound film, and television — in disseminating the research findings to the public. (See Appendix A)

The basic design of the study consisted of selecting five communities with newly reorganized school districts and matching them with five communities having traditionally-organized school districts and comparing these two groups over several years. The first pair of communities was selected in 1949-50; two pairs were selected in 1950-51; and the final two pairs were selected in 1951-52.

Newly reorganized districts were chosen so as to represent various levels of reorganization as established by educational authorities. Criteria used in selecting reorganized districts included such factors as district enrollment, physical facilities, size of community (community boundaries were made to coincide with trade area boundaries for the village center, and the high school attendance area; hence some reorganized communities also included some non-reorganized districts), tax base, bus transportation, a community with common interests, etc. These communities were then matched with non-reorganized communities on the basis of wealth, population (size and distribution), topography, type of farming, nearness to cities, and total area.

Two of the reorganized communities met the established criteria sufficiently well to be classified as "well-organized communities." Two were considerably smaller in enrollment, area, wealth, and potential educational program than demanded by the criteria. While the fifth reorganized community met some of the criteria, it did not meet others.

The first year that the communities were involved in the study, their first grade pupils were tested and compared. This same group of students was also tested at grades six and nine and will be tested at twelfth grade and studied five years after they graduate from high school. When this original group had reached sixth grade, a replication study was started with the students who were then in the first grade. The same pattern of testing and comparing will be followed for the replication group as was outlined for the original group.

Hypotheses in this report are tested on the basis of both sixth and ninth grade data that were analyzed during the period covered by this project. Major hypotheses tested herein are as follows:

H_{o1} "There are no differences between reorganized and non-reorganized school communities in opportunities available to students and teachers."

H_{o2} "There are no differences between reorganized and non-reorganized school communities in academic achievement and personal and social adjustment of boys and girls."

H_{o3} "There are no differences between reorganized and non-reorganized school communities in the relationship between educational expenditures and academic achievement of the students."

H_{o5} "There are no differences in the amount of knowledge gained by adults from research findings presented by lecture, bulletin, 16 millimeter sound film, or television." (Appendix A)

Another major hypothesis, H_{o4}, is not reported here since no additional data pertaining to it were analyzed. Previously, it had been concluded that school district reorganization had little, if any, effect on the pattern of farmers' social and economic ties with the village center.

Opportunities Available

In testing major hypothesis H_{o1}, data were organized and analyzed in a manner making it possible to test four sub-hypotheses as well. These four sub-hypotheses dealt with differences between reorganized and non-reorganized school communities existing in the areas of (1) teaching aids and supplemental materials provided; (2) availability and participation of teachers in in-service training activities and teacher qualifications; (3) availability of specialists and special teachers in the areas of Music, Art, Physical Education, Guidance, and Handicapped; and (4) availability of other opportunities.

Analysis of data collected on the availability of 13 separate teaching aids or supplemental materials revealed that the reorganized school communities reported these materials available in more of their schools than did the non-reorganized communities with the exception of up-to-date maps. Of the 13 materials studied, differences significantly different from zero were found to exist in favor of reorganized communities at $P \leq .05$ for availability of slide projector, movie projector, record player, basic science equipment, and a subject matter corner.

Examining teacher qualifications and the availability and participation in in-service training showed that teachers from the reorganized communities (1) had more years training beyond high school, (2) a higher percentage of their number had attended summer school within the past two years, (3) they received more in-service training, and (4) a higher percentage of the group visited other classrooms for the purpose of improving their own teaching methods. Teachers from the reorganized schools reported a significantly high portion of their number attending summer school during the past two years at $P \leq .01$.

It was also interesting to note that a significantly higher percentage of teachers from non-reorganized schools within the reorganized communities attended summer school during the past two years than did the control group at $P \leq .05$. On the other hand, teachers in the non-reorganized schools within the reorganized communities showed fewer years training beyond high school and lower participation in in-service training activities.

Findings of another segment of the study clearly pointed out that the reorganized communities had greater availability of specialists and special teachers than did the non-reorganized communities. Special assistance to sixth grade teachers in the areas of Music, Art, Physical Education, and Guidance was reported by a significantly higher percentage of teachers in reorganized school communities at $P \leq .01$. Although more teachers in reorganized communities reported the availability of a specialist to aid the handicapped, this difference was not significant.

Of the four other factors examined, a higher percentage of the reorganized school communities responded affirmatively to questions regarding the availability of accident insurance furnished by the district, central heating, telephone in the building, and a hot lunch program. Only in the case of the central heating item was there no significant difference.

Twenty-six factors were analyzed in this section and, with the exception of 'up-to-date' maps, all differences favored the reorganized school communities. Of these 26 factors favoring the reorganized segment, 13 were found to be significantly different from zero at either $P \leq .05$ or $P \leq .01$. On the basis of these findings hypothesis H_{o1} was rejected.

Achievement and Personal and Social Adjustment

A test of the achievement data collected from ninth grade students attending high school within the 10 communities revealed a somewhat different pattern in differences of academic achievement between the two groups than had existed at sixth grade. At sixth grade, for instance, both boys and girls from reorganized schools scored higher in 21 of 22 measures of achievement. At ninth grade it was found that of the 11 measures of achievement, girls in reorganized communities scored higher on all 11, while boys in reorganized communities scored higher on eight of the 11 measures. Boys from the non-reorganized schools achieved higher mean scores in Reading, Arithmetic Problem Solving, and Total English. While the boys who had attended reorganized elementary schools scored significantly higher at $P \leq .05$ in science, the girls in reorganized communities scored significantly higher than those in non-reorganized communities in Reading, Arithmetic Problem Solving, Literature and Total Achievement at $P \leq .05$, and higher in Arithmetic Fundamentals and Science at $P \leq .01$.

One finds a different picture when comparing boys and girls from the reorganized part of the reorganized communities with those from non-reorganized parts of these same communities. None of the differences found for the girls were significant nor did they approach significance. Also, girls attending elementary schools in the non-reorganized segment of the reorganized communities showed higher mean achievement scores in Vocabulary, Total English, Literature, and Spelling.

Boys from the reorganized part scored higher on all measures of achievement than did boys from the non-reorganized schools within the reorganized communities. Not only did they score higher in all measures, but they showed mean scores that were significantly higher at $P \leq .05$ in Arithmetic Fundamentals, Geography, Science, and Total Achievement. In Spelling Achievement the boys in the reorganized part had a mean score which was significantly higher at $P \leq .01$.

In addition to the above findings, it was noted in a separate cross-sectional study that there were no significant differences in academic achievement between different sizes (pupil enrollment) of reorganized districts in Wisconsin. By the same token neither were there found to exist any significant differences in academic achievement for farm students in different size (pupil enrollment) reorganized schools when intelligence was controlled.

Differences between boys and girls in personal and social adjustment have been found to exist in many other studies and the same was true in this research. However, in testing differences existing between girls attending the two types of school communities, no significant differences were found. Of the 60 items used in the California Test of Personality, the girls in reorganized communities had a higher number of correct responses to exactly one-half of the items, 30.

Boys attending elementary schools in the non-reorganized communities had a higher number of correct responses on 45 of the 60 items and showed higher mean scores on all sub-tests and the total test score than did boys from the reorganized communities. These same boys attained significantly higher mean scores for Sense of Personal Worth and Community Relations at $P \leq .05$ and the Total test at $P \leq .01$ than did boys from the reorganized communities. Controlling first grade Socio-Economic Status and first grade Teacher Ratings of Social Qualities revealed that boys from the non-reorganized communities still had significantly higher mean scores in Sense of Personal Worth and Community Relations. Controlling first grade Teacher Rating of Emotional Stability showed that although differences still existed in favor of boys in the non-reorganized communities, this difference was significantly different from zero only for Sense of Personal Worth. The difference on Community Relations responses was no longer significant.

On the bases of these findings, Hypothesis H_{o2}, "There are no differences between reorganized and non-reorganized school communities in boys' and girls' academic achievement and personal and social adjustment," is rejected in part. It is rejected with higher mean scores favoring reorganized communities as follows:

1. Differences in academic achievement of girls in the two types of districts.
2. Differences in science achievement of boys in the two types of districts.
3. Differences in academic achievement of boys in reorganized districts and those in the non-reorganized parts of the reorganized communities.

It is rejected with higher mean scores favoring non-reorganized communities as follows:

4. Differences between boys from the two types of districts for Sense of Personal Worth, Community Relations, and Total Personal-Social Score.
5. Differences between boys from the two types of districts for Sense of Personal Worth when first grade Socio-Economic Status, and first grade teacher ratings of Social Qualities and Emotional Stability are controlled.

In all other cases considered this hypothesis is accepted.

Expenditure

A study of the differences between the five reorganized and five non-reorganized communities failed to show any significant difference to exist between instructional expenditure and academic achievement. In fact, it was found that for each point of the mean total achievement raw score, 49 cents was spent on teachers' salaries, books, supplies, etc. (instructional expenditure). This amount of instructional expenditure per point of mean achievement was precisely the same for reorganized schools as it was for the non-reorganized. Along with this finding, it was revealed that the reorganized schools spent $12.23 more for instruction per pupil than did the non-reorganized communities. Only in the case of one pair of schools did the non-reorganized (control) spend more on instruction than did the reorganized school. On these bases, hypothesis H_{o3}, "There are no differences between reorganized and non-reoganized school communities in the relationship between achievement and educational expenditure," is accepted.

Analysis of relationships existing between academic achievement and mean operational expenditures, over a five-year period in a special group of 36 reorganized districts failed to show any differences significantly different from zero when analyzed in terms of high, medium, and low cost schools with intelligence controlled. All of the schools analyzed in this special part of the study were reorganized.

Conclusions

In considering the following conclusions, it should be remembered that the data analyzed in the basic project are those collected from students, their parents, and communities within the original study group. The findings are such that it is possible to draw firm conclusions on a number of items. Most analyses can be redone in the replication and any tentative results can be rechecked. A factor which would add a great deal of strength to the present findings would be the appearance of differences of a similar nature when intra-community comparisons are made between the original and the replication in the non-reorganized communities which had reorganized prior to the restudy.

Opportunities

On 13 separate teaching aids and supplementary material, the advantage favored reorganized schools with but one exception — up-to-date maps. It is reasonable to conclude from these findings that the teachers in reorganized school communities can provide educational advantages to the youngsters if they make use of the opportunities that are there.

There is some evidence, as shown by the qualifications of the teachers, that they have made use of opportunities in the reorganized communities. Teachers in these communities participate in more in-service education programs, they have more years of preparation for teaching, they attend summer school more than those in non-reorganized communities (this difference is significant), and they visit the classrooms of other teachers in efforts to improve their own teaching, more than do those in non-reorganized communities. These findings indicate that the reorganized community attracts a higher level of teacher who has a higher motivation for self improvement. Also after attracting this higher level teacher, the reorganized community provides the leadership for self improvement to a greater extent than the non-reorganized community.

Specialists in music, art, physical education, and guidance are available to a significantly greater extent in reorganized communities. Apparently, teachers in these communities have more time for professional preparation, for planning, and preparation of materials, and for special work with students, than teachers in non-reorganized communities. Accident insurance, a telephone in the school, and a complete lunch program make working conditions for teachers in reorganized school communities more acceptable.

Results show that boys and girls in reorganized communities have greater opportunities for learning than do those in non-reorganized communities.

Achievement

Academic: Achievement test scores favored both boys and girls in reorganized communities. Academic achievement is an important objective of the public school, and the reorganized school community promotes this achievement to a greater degree than the non-reorganized school community. In terms of academic achievement, girls seemed to profit more from reorganized communities than boys.

In a cross-sectional study of 39 reorganized districts, no significant differences between small, medium, and large reorganizations were found, when scores on arithmetic and reading tests were the criteria. The longitudinal study, however, suggested that the larger reorganizations attained higher achievement among their students than did the small reorganizations.

Personal and Social Behavior: The findings on personal and social behavior through grade six have shown no differences between girls in the reorganized and non-reorganized communities. At sixth grade, with related factors controlled, there are differences favoring boys in non-reorganized communities on their Total Scores on five parts used of the California Test of Personality and on the Sense of Personal Worth. Thus, one can conclude that, through the sixth grade, the smaller school districts in non-reorganized communities gave the boys a greater feeling of worthiness than boys in reorganized communities. The consistency in this pattern through grade nine is still to be tested. Possibly, the differing cultural bases among the youngsters (one-room school type neighborhood for one group and a rural village and farm service area for the other) accounted for differences in their responses in the Sense of Personal Worth section of the test. This needs further study.

Expenditure

In the longitudinal study, instruction cost $12.23 more per student per year. When this expenditure was related to actual academic achievement the same expenditure per "unit of achievement" was obtained.

In the related cross-sectional study no differences were found in achievement among reorganized districts with high, medium, and low expenditure for operation. No major differences appeared in instructional expenditure between reorganized and non-reorganized communities. The only minor increase in instructional expenditure in reorganized communities occurs in direct proportion to the increase in academic achievement. When total expenditure for operation is considered, there are no related achievement differences.

Socio-Economic Contacts

Increases in socio-economic contacts between the farmer and the village occurred at about the same rate in reorganized and non-reorganized communities. Apparently, increase in contact is not important in the promotion of school district reorganization.

Further Research

A longitudinal study this comprehensive leads to two additional research steps: first, those in direct line with the objectives of the study; and second, those beyond the objectives but suggested by research results already achieved. Based upon data readily available (and without extensive resources) several examples of further research pursuits are listed.

In Line with Initial Objectives

1. Begin intra-community analysis at first and sixth grade between original and replication groups for the three non-reorganized communities that have reorganized.
2. A replication of the analysis of the Achievement and Personal and Social Adjustment data at sixth grade.
3. Restudy of the youngsters at ninth grade in terms of Personal and Social Adjustment data.
4. Analysis of difference in the ninth grade interest patterns of boys and girls in reorganized and non-reorganized school communities.

Beyond Initial Objectives

1. A more comprehensive study of relationships between achievement and personal and social adjustment (not only between reorganized and control communities, but between reorganized and non-reorganized parts of communities classified as reorganized.
2. A comparison of the value and quality of in-service training activities carried out by reorganized and non-reorganized communities.
3. A more comprehensive study of the cost-achievement relationship between reorganized and non-reorganized school communities.
4. A more comprehensive study of the relative effectiveness of different media in disseminating research findings to the public. (See Appendix A)
    A. Use of the semantic differential technique to measure attitude changes caused by the various media.
    B. Presentation of research findings through the different media to randomized sub-groups as well as the presentation of other types of subject-matter material to similar groups as a means of comparing the effectiveness of the different media in dispersing different types of material.
    C. Further analysis of effectiveness of the four media with strict controls on intelligence or level of school attainment among groups.

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Appendix A: Which of Four Media Communicated Research Results Most Effectively?

Purpose

THIS STUDY CONCERNS the relative effectiveness of four media. Its primary objective was to determine whether or not differences existed among them when used to report research findings to the public. The four media — lecture, bulletin, 16 millimeter film, and television — were used to present research findings on school district reorganization to five different groups of adult participants.

Modern science supplements the printed and the spoken word in many ways. Television and film presentations were compared with more conventional lecture and bulletin methods in order to rate the effectiveness of the newer visual media in presenting research findings.

Researchers and teachers need to know the most effective ways to convey their findings to the public. The problem of media effectiveness has prompted this phase of the school district reorganization study. The knowledge gained from the findings through a presentation by each medium was measured and compared to determine the effectiveness of the medium used. It is believed that the comparisons made in this investigation will provide some evidence on which to base sound judgments in the selection of media for technical communication.

Background

Public schools, as well as universities and State Cooperative Extension services, have been experimenting extensively with communication media. Television has been introduced into the classroom and audio-visual aids are being used to supplement the reading-recitation routine. Leader-training programs of Cooperative Extension still rely largely on the traditional lecture and bulletin methods.

The most comprehensive review of investigations on the effectiveness of different media was prepared by Allen[1] His review emphasized the major contributions of film and television research. According to Allen, films can teach effectively over a wide range of subject matter content, ages and abilities of audience and conditions of use. Teaching by television is effective at levels from elementary school to military training. In a limited number of studies reporting on the learning of adults watching television in their own homes, the findings showed that learning did occur. The evidence indicated that live television, kinescopes, and conventional films are equivalent from a teaching point of view.

The medium itself often affects acceptance more than does the content of the material transmitted. Locke Dahle,[2] in his doctoral study, compared written and oral communication in presenting information to business employees. Analysis of the data disclosed oral communication to be more effective than the written form, with the difference being statistically significant for both the professional and industrial workers. Two conclusions helped in the design of this study: (1) for effective results the material presented should be significant and informative to the communicatee and (2) the presentation should not take longer than 15 minutes.

A comparison of the teaching effectiveness of television with an Extension bulletin was made in a study by Collican.[3] The participating women first took a pre-test of the material later covered by both printed and mimeographed bulletin and by television. The post-test analysis of the data showed that the group viewing the television program had a significantly greater change in knowledge than did the bulletin group. The women who read the material in a printed bulletin retained the information better than did those who read the mimeographed bulletin.

Preparation and presentation of factual information was considered by Brandon[4] in his study of television methodology. The lecture, interview, and discussion were considered. Participants reported that the lecture was least interesting of the three methods in this study conducted with 144 college freshmen. Measured by information transmitted, there were no significant differences among the three methods. Heavily documenting informative material failed to make it more convincing when presented in lecture form, according to the study by Cathcart.[5] Salient facts supporting the conclusions are desirable, but detailed authority is distracting.

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[1] William H. Allen, "Audio-visual Communication". *Encyclopedia of Educational Research*. (Edited by Chester W. Harris.) Third edition. New York: 1960, pp. 115-137.

[2] Thomas Locke Dahle, "Objective and Comparative Study of Five Methods of Transmitting Information to Business and Industrial Employees." Ph.D Dissertation, Purdue University, Lafayette, Ind., 1954.

[3] Patricia M. Collican, "A Study of the Effectiveness of Teaching by Television Versus Teaching by the Use of an Extension Bulletin." *Michigan Review of Extension Research*, Volume 1, August, 1960.

[4] James R. Brandon, "An Experimental Television Study: The Relative Effectiveness of Presenting Factual Information by the Lecture, the Interview, and the Discussion Methods." *Speech Monographs*, Vol. 23-24, p. 272-283, November, 1956.

Early experimental research in the use of audio-visual media for psychomotor learning was conducted by the armed service training program and they were generally reported as effective media for instructional purposes in manual skills. Hoban and Van Ormer[6] reported on several of the army studies in the audio-visual field. Nelson[7] conducted a study with 420 R.O.T.C. trainees in which those who saw the visual part of a film were compared with those who heard the audio part only. The visual group scored higher in a test of an informational type. Kanner, Runyon, and Desiderato[8] found that television instruction produced significantly higher scores than regular instruction among low aptitude army trainees on 10 of 17 achievement tests. The Nelson and VanderMeer[9] study reported a significant difference in test scores favoring the use of sound film versus sound track only in transmitting factual information.

The Westley-Barrow Study[10] of television-radio effectiveness reported,

> The television group made significantly higher scores than the radio group on an immediate recall test of factual knowledge. The television group's mean score on a delayed recall test six weeks after the last program still was higher than that of the radio group but the difference was no longer significant.

Tanner's[11] report on closed circuit television teaching followed research work with 180 law students. Comparison of the television group with those in the non-television group revealed no superiority by the television group. When the television group was left without supervision, their test score was significantly lower than that of the non-television group. Jacobs and Bollenbacher[12] in dealing with sixth graders in the Cincinnati Public Schools found that the high ability students in the television group scored significantly higher than the high ability students in the non-television group. Conversely, the low ability students scored better in the classroom situation than as a television class. Langer[13] was enthusiastic in his appraisal of television classes for students, following his study of the Hagerstown, Maryland, educational television experiment, while both Lang[14] and Fin[illegible] stressed that the greatest value of television accrued to the teachers.

Westley and Barrow[16] reported in their study comparing the relative effectiveness of radio and television in presenting news information to 228 sixth graders that, "Intelligence was significantly related to scores on immediate and delayed recall tests."

Hovland, Lumsdaine, and Shefield[17] found in their experimental research on the effects of films on men of different intellectual ability that, "In all cases the higher the intelligence, the greater the amount of information gained from films." They concluded that,

> The intellectual level of the audience will make a difference as to the amount of information they can be expected to acquire. The effectiveness of one form of presentation to a high intelligence level group could not be fairly evaluated and compared without some corrective correlation being made on the proportionate difference in the two levels.

Langer[18] in his report on the Hagerstown, Maryland, experimental work with television in classroom teaching revealed that more accurate tests of media result when the experimental students are grouped by mental ability.

Hoban and Van Ormer[19] report from their 12 studies on audio-visual media that,

> It appears that . . . there is a fairly high positive correlation between intelligence and learning from . . . pictorial-verbal media of communication.

Research reports on communication conflict Media studies have dealt mostly with controlled groups such as classroom students and army personnel. Communication studies with independent adult groups are rare.

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[5] Robert S. Cathcart, "An Experimental Study of the Relative Effectiveness of Four Methods of Presenting Evidence," *Speech Monographs*, Vol. 21-22, p. 227-233, June, 1955.

[6] Charles F. Hoban, Jr., and Edward B. Van Ormer, *Instructional Film Research*, 1918--1950. SDC Human Engineering Project 2-E-4, Port Washington, N. Y.: Special Devices Center, 1951.

[7] Harold E. Nelson, "The Relative Contribution of Video and Audio Elements in Films," *Speech Monographs*, Vol. 17-18: p. 22-27, March, 1951.

[8] J. H. Kanner, R. P. Runyon, and O. Desiderato, *Television in Army Training: Evaluation of Television in Army Basic Training*, Washington, D. C., Human Resources Research Office, Technical Report No. 14, 1954.

[9] H. E. Nelson and A. W. VanderMeer, *The Relative Effectiveness of Differing Commentaries in an Animated Film on Elementary Meteorology*, Technical Report SDC 269-7-43, Port Washington, N. Y.: Special Devices Center, 1955.

[10] Bruce H. Westley and Lionel C. Barrow, Jr., "Exploring the News," A Comparative Study of the Teaching Effectiveness of Radio and Television, *University of Wisconsin Television Laboratory, Research Bulletin No. 12*, p. 24.

[11] Sheldon C. Tanner, "Experiments in Teaching by Closed Circuit Television," *School and Society*, 85: 229-34, June, 1957.

[12] James N. Jacobs and Joan K. Bollenbacher, "An Experimental Study of the Effectiveness of Television versus Classroom Instruction in Sixth Grade Science in the Cincinnati Public Schools, 1956-57," *Journal of Educational Research*.

[13] H. J. Langer, "Assignment: Hagerstown," *Senior Scholastic*, 71: 9-14, October, 1957.

[14] Duaine C. Lang, "ETV's Forgotten Learner," Audio-Visual Instruction, p. 26-28, April, 1960.

[15] James D. Finn, "Television and Education: A Review of Research," *Audio-Visual Communication Review*, Vol. 21-22, p. 106-126, Spring, 1953.

[16] Westley and Barrow, *Op. Cit.*, p. 24.

[17] Carl I. Hovland, Arthur A. Lumsdaine, and Frederick D. Shefield, *Experiments on Mass Communication*, Chapter 6, "Effects of Film on Men of Different Intellectual Ability."

[18] Langer, *Op. Cit.*, p. 14.

[19] Hoban and Van Ormer, *Op. Cit.*

Allen[29] reported six studies dealing specifically with adults. They ranged from those enrolled in psychology courses (where the home viewing television audience received higher grades than those in regular campus classes) to an investigation of the effectiveness of teaching sewing practices to women by television. The latter was reported to be highly effective.

This study compares independent adult groups on knowledge gained from presentation of research findings by lecture, bulletin, film, and television. The research findings presented came from an interim report on the school district reorganization study included here.

Rural citizens have been especially interested in knowing the research results and the researcher was equally interested that they be known. Both were anxious to have them presented in a readily understandable way. Speculation as to the best way prompted the study in which the findings were presented by four media and an effort made to measure and compare the effectiveness of the media by which they were presented.

Design of the Media Study

Selection of the Media

This investigation of the comparative effectiveness of four media in disseminating research material is unusual in that little, if any, previous research in mass media has been directed specifically at its use in presenting research findings. For this reason the discussion of the design willl be detailed. The study revolved around the central theme of selection and use of communication media. Media selected were the lecture, bulletin, 16 millimeter sound film, and television.

The spoken word is the most universal and widely used form of communication and is frequently considered the most effective. However, the opportunity for an evaluation of it as a teaching method was precipitated by a circumstance which merits mention. The school district reorganization research directed by the investigator is a widely known work on a controversial subject. Results of this research provide a good means of comparing verbal communications with other forms. It was feared that, when the latest findings were released, there would be far more requests for lecture presentation than could possibly be met by the research director and his staff. This caused concern which directly contributed to the proposal of this related study.

Although speech is the most universal way to communicate, the printed word is most commonly used to present research findings. It is easy to use, relatively inexpensive, far reaching in coverage and can be referred to later. In this study the bulletin was a logical printed form to evaluate, since the University of Wisconsin Department of Agricultural Journalism would handle printing and distribution. In addition, the Department of Agricultural and Extension Education would aid in bulletin distribution as a part of its public service activities.

A review of relevant literature had indicated that audio-visual media, such as the motion picture, are more effective in transmitting information than are auditory or visual methods alone. Such media are being used increasingly in the teaching-learning context because of their adaptation to graphs, charts, maps, still pictures, etc. Like the printed word, the film has a degree of permanancy, but it is more like the lecture in its personalized presentation.

The television medium was included because of its newness and widespread availability, and because, like the printed word, it reaches into the home. Television resembles the film in methodology, the lecture in personal presentation and lack of permanency, and printed matter in its wide range of audience.

Nature of the Content of the Presentation

In order to evaluate the effectiveness of the four media used in this study, it was considered essential that the findings which they presented meet certain requirements. These requirements are:

1. The findings should be new and unpublished material. The effectiveness of the medium used in presenting the research findings is determined by the amount of information gained. Therefore, the audience should not have extensive prior knowledge of the material.

2. The findings should relate to a field which does not require special knowledge, training, or acquaintance with specific or scientific terms for understanding.

3. The findings should be of interest and importance to all participating groups so that the presentation would attract attention irrespective of the media used. This would place all the media on the same starting level.

4. The material covered by the findings should be easily adaptable to presentation by each of the four media in an equally attractive way so as to neither penalize nor give preference to the medium used.

5. The findings should be of such a nature that the import of their message could be presented within a 15-minute period equally well by each of the media employed.

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[29] William H. Allen, *Op. Cit.*, p. 118.

The research findings on school district reorganization seemed to meet these criteria. The material was unpublished and in the field of education, with which the general public relates, understands and judges important. The findings favorably lent themselves equally well to presentation by each of the four media used. And they could be condensed into the brief period allotted for their presentation.

Selected variations were used to compare settings for dissemination and testing of the research information on school reorganization:

1. Completion of the check test immediately upon completion of the lecture, bulletin, film, or television presentation;
2. Discussion following the presentation but prior to completion of the check test;
3. Delayed response between the time of presenting the findings and completion of the check test;
4. Presentation of the findings by a source once removed from the original researcher and staff.

Cognizance was taken of the impact of these procedures in the analysis of the data and certain secondary objectives of the study were developed in relation to them.

Sample and Procedures

Seven audience groups participated in the study. Selection of these groups was not made in conformity to predetermined criteria, but some general prerequisites were established. Samples were selected to represent populations from which they were drawn, either by way of residence within a limited geographical area, or by homogeneity of interests or vocation within the group itself. In addition, group members were chosen on the basis of their interest in the subject area of the research findings as a parent, school board member, teacher, or taxpayer. Finally, the researchers preferred groups bound by a sense of membership loyalty or identification in order to assure cooperative participation in the study. A favorable predisposition toward the University was also deemed important.

The seven participating groups all satisfied these prerequisites. For purposes of identification these seven groups were: 151 school board members in Racine County; 78 leaders in Homemakers Clubs in Marinette County; 335 Homemakers Club members in the same county; 113 Homemakers Club members in Chippewa County; 106 teachers and County College students in Manitowoc County; leaders and members of Homemakers Clubs in Richland County, and a class of 14 graduate students at the University of Wisconsin.

Both the Richland County Homemakers and the University graduate students lent an invaluable service to the study by participating in the pre-test check of the adequacy of the bulletin and the validity of the test. This pre-test resulted in some minor changes in the mimeographed bulletin prior to its being printed. It also accounted for some changes in both the form of the check sheet and the number of questions asked. Consequently, the material which was presented to these two initial groups did not coincide with that presented to later groups, and their scores were not included in the data used for media comparison in the study.

General population characteristics found in the five remaining groups were a wide range of age, presence of both men and women in the teachers and board members' groups, and a marked diversity of educational level. In characteristics of civic interests and self improvement, the participants were assumed to be above average on the basis of their membership in these groups.

In the actual presentation, groups were divided into sections or sub-groups. This was always done by drawing from a table of random numbers so that each sub-group was a random sample of the whole group when tested for media effectiveness. The groups used in the study were voluntary organizations of adult membership. It was not the contention of the study that the membership of these participating groups represented a cross-section of the general population but that they were representative of their population type and that the study conclusions, based upon their participation, would have useful applications.

Upon receiving the research report by the selected media, each participant completed a 19-question, objective, written test covering information presented by the media. The mean number of correct responses to this check test was computed for participants in each sub-group. These mean scores reflected the knowledge which the participants gained from the findings presented by the various media.

Analysis and comparison of these mean scores will be used to either support or reject the hypotheses tested. These data will be of value in the examination of knowledge differences which may be attributed to certain procedures used in the study, and to the level of academic school work attained by the participants. Relating test scores and education was a secondary objective.

In instances where only two sub-groups are involved in a comparison of media the "t" test was used to test whether or not the differences are significantly different from zero. Where multiple (more than two groups) variables were present, Analysis of Variance was used to test for significant differences. In instances where the F obtained by ANOVA was of such a magnitude as to indicate significance, the differences between pairs of means were tested for significance by Scheffe' modified procedure suggested by Stanley.[21] The results of this latter test appear on the tables as F_t ratios and their significance is indicated.

Hypotheses

The school reorganization research project provided a unique opportunity for testing a further hypothesis relative to the effectiveness of four different media in disseminating research findings. This major hypothesis stated in the null form is:

> H_{o5} — There are no differences in the amount of knowledge gained by adults from research findings presented by lecture, bulletin, 16 millimeter sound film, and television. For more detailed analysis, data were collected and analyzed in terms of the following sub-hypotheses:
>
> H_{5a} — There are no differences between presentations made by the researcher and by local lay leaders in the amount of knowledge gained by adults from research findings presented by lecture, bulletin, or 16 millimeter sound film.
>
> H_{5b} — There is no difference in the retention of knowledge gained by adults from research findings presented by bulletin or television.

Tests of these hyptheses will be made among the sub-groups in each of five settings. Descriptions of the findings for the combined settings will be presented but not subjected to statistical test.

In addition, the results will be categorized and described in relation to the level of schooling attained by participants.

Findings

Among and between Media in Separate Groups

In all, 783 adults were exposed to the research findings: 232 heard the lectures, 268 read the bulletin, 226 saw the sound film, and 57 watched the television presentation. The media were compared directly as they were used within the different groups. No group received the findings by all four media, and two groups were exposed to only two media each. Comparison of the media was made by pairs.

The five groups used in the study are identified as follows:

- Group I — Racine County School Board Members.
- Group II — Leaders, Marinette County Homemakers Clubs.
- Group III — Members Marinette County Homemakers Clubs.
- Group IV — Leaders, Chippewa County Homemakers Clubs.
- Group V — Manitowoc County Teachers and County Teachers College Graduating Class.

Lecture-Bulletin Comparison: The lecture and bulletin media were used in the presentation of research findings to four of the five groups in the study. Comparison of these two media will be made with each of the presentations.

The lecture-bulletin data (Group I) are reported in Table LVIII.

TABLE LVIII.—A Comparison of the Lecture and Bulletin Used in Presenting Research Findings to School Board Members in Racine County

Media	Number	Correct Mean Scores	"t" test
Lecture	93	13.50	
Bulletin	58	12.58	2.09*

*Significant at $P \leq .05$

This was a simple, direct comparison. The board members were randomly divided into two groups: one group read the bulletin while the other heard the lecture. The check test was completed immediately following the presentations by the research staff. Table LVIII shows that according to the "t" test there is a significant difference at $P \leq .05$.

The lecture-bulletin data (Group II) was identified to that used with Group I, except for the addition of a third group which viewed the film. Division was effected by randomly selected numbers, the presentation was conducted by the investigator and staff, and the check test completed immediately following the presentation. Data for this group presented in Table LIX and analyzed by ANOVA show an F ratio that is not significant.

TABLE LIX.—A Comparison of the Lecture, Bulletin, and Film in Presenting Research Findings to Leaders of Marinette County Homemakers Clubs

Media	Number	Correct Mean Scores	F-ratio
Lecture	21	13.85	
Bulletin	24	13.20	.031
Film	33	13.57	

The lecture-bulletin data (Group III) involved three media and members were randomly assigned to three sub-groups. The research findings were presented and the check test completed immediately thereafter. The procedural difference characterizing this group was the substitution of lay leaders for the investigator and staff in making the presentations and the setting was at informal club meetings. ANOVA revealed significance at

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[21] Julian C. Stanley, "Additional Postmortem," Tests of Experimental Comparisons. *Psychological Bulletin* Vol. 54, No. 2. March, 1957.

P ≦ .05 among the mean correct scores. Data for this group presented in Table LX show that the results of the modified Scheffe' test on pairs of means indicate that differences between the lecture and film and between bulletin and film are significant at P ≦ .01. In both instances the film group showed the lower number of correct mean scores.

TABLE LX.—A Comparison of the Lecture, Bulletin, and Film in Presenting Research Findings to Members of Marinette County Homemakers Clubs

Media	Number	Correct Mean Scores	F-ratio	F-ratio Lecture Bulletin	F-ratio Bulletin Film	F-ratio Lecture Film
Lecture	83	11.38		−.148		
Bulletin	96	11.53	3.04[a]			5.42[b]
Film	156	10.57			8.13[b]	

[a] Significant at P ≦ .05
[b] Significant at P ≦ .01

The lecture-bulletin data (Group V) involved the same procedure used with Group II, except that the investigator and his staff held a 20-minute question-answer session between the presentation and the completion of the check test. One may note from Table LXI that the correct mean scores for the lecture and bulletin were somewhat higher with this group, but that the film group scored lower. ANOVA shows the significance to exist at P ≦ .05 among the groups. The Scheffe' test shows the differences between the lecture and bulletin to be significant at P ≦ .05 and between the lecture and film to be significant at P ≦ .01.

TABLE LXI.—A Comparison of the Lecture, Bulletin, and Film in Presenting Research Findings to Manitowoc County Teachers and County College Students

Media	Number	Correct Mean Scores	F-ratio	F-ratio Lecture Bulletin	F-ratio Bulletin Film	F-ratio Lecture Film
Lecture	35	14.71		2.98[a]		
Bulletin	34	13.67	3.38[a]			6.60[b]
Film	37	13.19			.628	

[a] Significant at P ≦ .05
[b] Significant at P ≦ .01

Lecture-Film Comparison: The lecture-film comparison was made with three of the same groups which were used in the lecture-bulletin comparisons.

The lecture-film data (Group II) analysis is noted in Table LIX. While the correct mean score for the lecture was higher than for participants in the film group, this difference was not significant.

The lecture-film data (Group III) dealt with members of the Homemakers Clubs of Marinette County, Wisconsin. They received the research findings from two lay leaders in each club, who, in turn, had received the information from the investigator and his staff at 'center' leader training meetings at an earlier date. Leaders used the same media to present the findings to their members at local meetings as was used to present the findings to them at 'center' leader training meetings. Table LX showed that there was a significant difference between the mean scores of groups receiving the findings by lecture and film presentations at P ≦ .01.

The lecture-film data (Group V) involved a setting where the research findings were presented by the investigator and his staff. However, following the presentation of findings, each group was exposed to a 20-minute question-answer period prior to completion of the check test. The data shown in Table LXI indicate differences among the groups that are significant at P ≦ .05 and the F_t ratio from the modified Scheffe' test shows that the difference between lecture and film correct mean scores favors the lecture and is significant at P ≦ .01.

Bulletin-Film Comparison: *The bulletin-film data (Group II)* has been presented in Table LIX. Although ANOVA failed to find a signficant difference among the mean scores of correct responses by Marinette County Homemakers Club leaders, a small difference existed between the film and bulletin groups. In this case, leaders in the film group showed a slightly higher correct mean score.

The bulletin-film data (Group III) came from presentations of findings by local leaders at local homemaking club meetings. Two major procedural changes made in dealing with this group led to expectations of differences between scores obtained by the leaders (Group II) and Group III. Tables LIX and LX reveal a decrease in correct mean scores when the findings were presented by local leaders.

Table LX indicates that there are significant differences among the mean scores of sub-groups within Group III at P ≦ .05. Members reading the bulletin made higher correct mean scores than did those exposed to the findings through the film. This difference was significant at P ≦ .01.

The bulletin-film data (Group IV) involved presentations to Manitowoc County teachers and college students, followed by a discussion period. Table LXI indicates that the bulletin group scored higher than the film group, but the difference is not significant.

Television-Bulletin Comparison: Only one televised presentation was made. The two subgroups participated in homes of randomly assigned leaders in the Chippewa County Homemakers Clubs. Leaders from the 'immediate response' sub-group completed their check tests immediately upon reading the bulletin or viewing the television presentation of the research findings.

TABLE LXII.—Analysis of Variance for Research Findings Presented by Bulletin and Television with Immediate and Delayed Responses

Media	Response	Numbers	Correct Scores Mean	F-ratio
Bulletin	Immediate	26	14.00	
Bulletin	Delayed	30	12.46	6.22*
Television	Immediate	29	12.93	
Television	Delayed	28	11.38	

* Significant at $P \leq .01$

Leaders from the 'delayed response' sub-group did not complete their check tests until they attended a center leader training meeting 10 days to two weeks after the television program or reading the bulletin. Table LXII presents the one-way ANOVA of all four sub-groups — bulletin immediate, bulletin delayed, television immediate, and television delayed — which gave the F-ratio of 6.22. This value of F was great enough to indicate significance among the differences at $P \leq .01$.

Table LXIII shows the differences between the immediate and delayed response for both the bulletin and television and the ANOVA of these differences. In the case of both media, leaders who completed their check test immediately after receiving the findings scored higher than those whose responses were delayed. These differences were great enough to be significant at $P \leq .01$.

TABLE LXIII.—A Comparison of Immediate and Delayed Response to Research Findings Dispersed by Bulletin and Television to Leaders in Chippewa County Homemakers Clubs

Media	Response				F_t ratio
	Immediate		*Delayed*		
	Number	Correct Scores (Means)	Number	Correct Scores (Means)	
Bulletin	26	14.00	30	12.46	6.27*
Television	29	12.93	28	11.38	6.77*

* Significant at $P \leq .01$

Table LXIV compares the effectiveness of television and bulletin presentations when the response to the check test was made immediately and 10 days to two weeks later. Leaders reading the bulletin scored higher than those watching the television presentation regardless of whether they responded immediately or after the interval. These differences were signficant at $P \leq .05$.

TABLE LXIV.—A Comparison of Bulletin and Television in Dispersion of Research Findings to Leaders in Chippewa County Homemakers Clubs Measured by Immediate and Delayed Response

Response	Media				F_t ratio
	Television		*Bulletin*		
	Number	Correct Mean Scores	Number	Correct Mean Scores	
Immediate	29	12.93	26	14.00	3.01*
Delayed	28	11.38	30	12.46	3.42*

* Significant at $P \leq .05$

Among and between Media Totals of Five Groups

A summary of all the correct mean scores, regardless of the group's composition or procedures used, are presented in Table LXV. The lecture-instructed participants seemed to have gained a little more knowledge from the findings than did the other participants, when rated by their responses to test items. No measure of significance between or among the groups in this summary was undertaken due to the many variables involved. The film seemed to be the least effective media and produced the greatest variation among scores. Among the three other media, television showed the least variation. The standard deviation was 2.33.

TABLE LXV.—A Comparison of the Lecture, Bulletin, Film, and Television in Dispersing Research Findings by Various Procedures to Five Groups of Participants

Media	Number	Mean Correct Scores	Standard Deviation
Lecture	232	12.96	3.11
Bulletin	268	12.52	3.03
Film	226	11.44	3.25
Television	57	12.15	2.33

Educational Level of Participants

Other tests comparing media have included intelligence in the variables and have suggested a close relationship between intelligence and effectiveness of media in transferring information.

Intelligence could not be used in this study. Level of education was substituted. Participants recorded on the check test the highest grade of school they had completed. Five levels of academic achievement were established for comparative purposes. Data on the number of participants at each level, the mean correct scores of participants at each level, and the percentage of other respondents at each level are found in Table LXVI.

TABLE LXVI.—A Comparison of the Number of Participants at Various Grade Attainment Levels with Mean of Correct Scores

Grade Attainment	Number	Percentage	Mean Correct Scores
Grade 8 or Lower	133	18%	11.06
Grades 9, 10, 11	87	12%	11.35
Grade 12	285	40%	12.09
Grades 13, 14, 15	154	20%	13.36
Grade 16 or Higher	73	10%	14.12

Because a few participants in each group failed to record their highest grade attainment, there is a discrepancy between the total number of participants and the numbers included in the grade attainment table. Table LXVII suggests a positive correlation between the level of academic attainment and the mean of correct answers to the check test items, irrespective of the media used. Academic level may more closely determine the participant's ability to respond correctly to the questions than does the media by which information on the question is presented. This is supported by the findings of Hovland, Lumsdaine, and Shefield[22] in their book, *Experiments on Mass Communication.*
They report:

> It would appear from this research that intelligence levels of adults could be as reasonably set by knowledge of their years of academic school work, as secured from answers to a questionnaire.

Undeniably, the academic attainment level does have a bearing on the number of correct responses. Participants with higher grade attainment made more correct responses to the check test than those with low attainment. Although this study focuses on the relative effectiveness of four media in presenting research findings, the participants' academic attainment level is naturally of concern.

The impact of grade level on the mean correct scores cannot be disregarded. The media are compared by measuring the knowledge gained by participants from information presented by the media. If knowledge gain varies with the academic level of the participants, then their academic level must be noted. One medium cannot be judged superior to another on the basis of the mean correct scores if one participating group were all of a higher academic level than a second group using another medium.

Data presented in Table LXVII give the number of participants at each grade level for each media; the mean of their correct scores; and the percentage of participants in each grade level group. About 40 per cent of the participants in each 'media group' were high school graduates, but the percentage of participants with less than a high school education, or academic training beyond high school, varied considerably among media groups. For instance, 39 per cent of those hearing the lecture had attended college compared with 21 per cent of those who read the bulletin. This suggests that the inequalities would likely confound the validity of media effectiveness measures in presenting the research findings. However, media comparisons were made *within* each group, *not between them.* Table LXVIII shows the grade attainment of the participants within its parent group to be quite evenly divided. Hence, the level of educational attainment is not likely to affect validity in this analysis. The influences of academic attainment upon the comparison of media effectiveness might be studied further.

Summary and Conclusions

Data used in comparing media effectiveness in presenting research findings are taken from comparisons made *within each* group of participants. Results within each group were compared by either "t" test or, where more than two media were used, by ANOVA. When ANOVA yielded F-ratios significantly great, pairs of differences were further compared using Scheffe's modification. Total comparisons of the media were made among groups. However, because of the variations in the method-

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[22] Hovland, Lumsdaine, and Shefield, *Op. Cit.*

TABLE LXVII.—Mean Scores and Grade Attainment of Participants Classified by Media Used in Dispersing Research Findings

Media	Grade Attainment	Number of Participants	Mean Correct Scores	Percentage of Media
LECTURE				
	Grade 8 or Lower	23	12.00	10%
	Grades 9, 10, 11	24	11.80	11%
	Grade 12	90	12.50	40%
	Grades 13, 14, 15	58	13.91	26%
	Grade 16 or Over	31	14.35	13%
BULLETIN				
	Grade 8 or Lower	50	10.79	20%
	Grades 9, 10, 11	33	11.63	13%
	Grade 12	99	12.73	39%
	Grades 13, 14, 15	48	13.91	19%
	Grade 16 or Over	23	14.47	9%
FILM				
	Grade 8 or Lower	49	9.89	26%
	Grades 9, 10, 11	23	10.09	12%
	Grade 12	70	12.12	36%
	Grades 13, 14, 15	32	12.69	17%
	Grade 16 or Over	18	13.22	9%
TELEVISION				
	Grade 8 or Lower	11	12.72	21%
	Grades 9, 10, 11	7	12.21	13%
	Grade 12	26	11.96	49%
	Grades 13, 14, 15	8	12.25	15%
	Grade 16 or Over	1	15.00	2%

TABLE LXVIII.—Distribution of Group Participants by Media and Grade Attainment

Participating Group	Grade Attainment					
	Grade 8 or Less	Grades 9—11	Grade 12	Grades 13—15	College Graduate	Total
Racine County School Board Members						
Lecture	6	8	42	16	19	91
Bulletin	13	6	21	7	5	52
Marinette County Homemakers Club Leaders						
Lecture	3	4	9	4	1	21
Bulletin	6	3	12	3	0	24
Film	5	6	13	8	1	33
Marinette County Homemakers Club Members						
Lecture	14	12	39	14	1	80
Bulletin	20	18	42	4	6	90
Film	44	17	57	15	5	138
Manitowoc County Teachers and County College Students						
Lecture	0	0	0	24	10	34
Bulletin	0	0	0	23	11	34
Film	0	0	0	17	12	29
Chippewa County Homemakers Club Members						
Immediate Bulletin	2	4	13	4	0	23
Delayed Bulletin	9	2	11	7	1	30
Immediate Television	7	5	10	4	0	26
Delayed Television	4	2	16	4	1	27

ology used among the different groups, tests of significance are inappropriate. These differences are of interest as secondary objectives of the study.

Presentation of the research findings and completion of the check test were as uniform as possible. In all instances but one, the lecture was presented by the researcher. Research assistants distributed the bulletins, showed the film, and supervised completion of the check test.

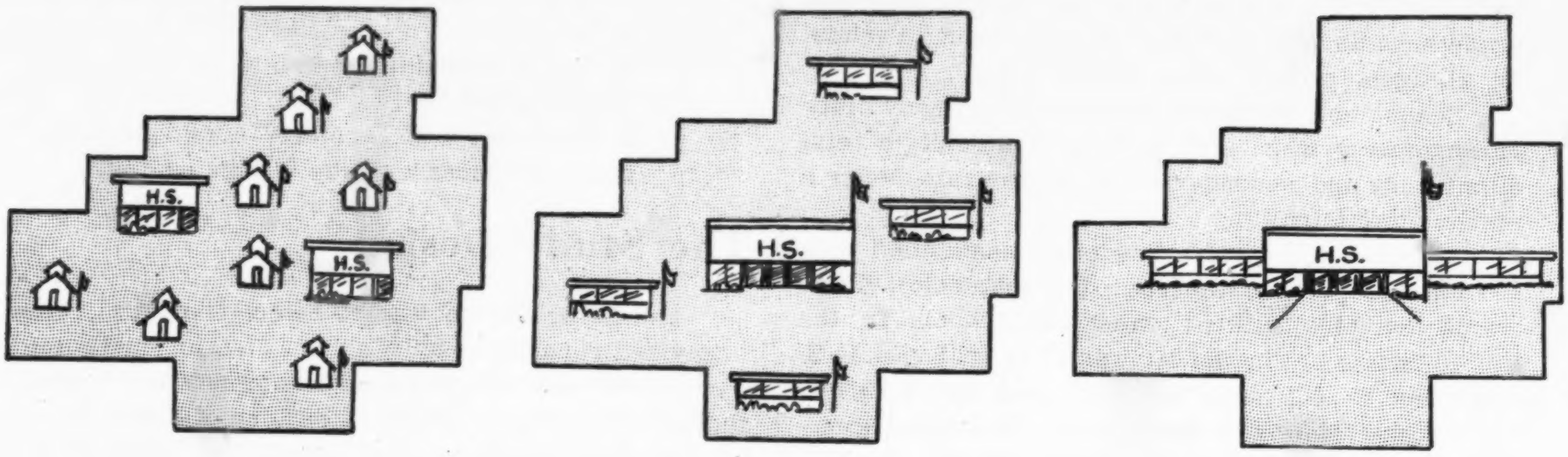
Uniform settings and procedures were used in the lecture-bulletin comparisons in Groups I and II. In the lecture-bulletin comparison in Group III, both the procedure and the setting were varied. In Group III, research findings were presented to local clubs in an informal setting, the lecture was given by local leaders rather than by the researcher, and staff members were not present to assist with presentation by other media or with the check test. The lecture section of Group III, all Homemakers Club members from Marinette County, were expected to score significantly lower because the lecture was being given by a source once removed from the researcher.

Differences in sub-group scores can best be seen by comparing Group III with Group II, the members and leaders of Homemakers Clubs in Marinette County respectively. In Group II, the lecture sub-group mean was 13.85, while in Group III it was 11.38. The difference between these two means is significant, and can most likely be attributed to the variation in the lecture presentation. However, a similar difference exists between the means of participants in the film and bulletin sub-groups of Groups II and III. This second difference was unexpected and leads to consideration of whether or not the setting in which the findings are presented has as much or more influence on the knowledge gained than do the media.

The procedural difference in Group V was the introduction of a 20-minute question-answer period before the check test. The scores for the group of teachers and county teacher's college students in Manitowoc County disclosed that the lecture sub-group had a significantly higher mean score than did the film and bulletin groups. This difference did not appear with Group II. In Group V the film, bulletin, and lecture sub-groups all engaged in discussion, but only one group reflected a higher check test score. Thus a question as to the relative effectiveness of the discussion period with selected media can be raised. The superiority of the lecture sub-group in this comparison possibly reflects the presence of the researcher who may have answered questions asked in the lecture sub-group better than the assistants who led the discussion period in the bulletin and film sub-group. It could possibly reflect greater effectiveness of a discussion period following a lecture than either bulletin or film. The lecture superiority needs to be verified under controlled conditions.

The procedure followed with Group IV in Chippewa County was too different to compare scores with other groups. However, Homemaker Club leaders in Chippewa County, reading the bulletin in their homes, performed much better on the check test than did the Marinette Homemakers, who read the bulletin in club meetings in members' homes. Undisturbed home reading seems to be superior to group reading. The television program in the home appeared to be more meaningful than did the film viewing by a small group, but no test of significance could be used within the framework of the design. Delayed response lowered the mean scores very little. No medium displayed any advantage over the others in enabling participants to recall material after a time lapse.

Special Bulletin 6 **March 1961**



School District Reorganization...

Does it make a difference in your child's education?

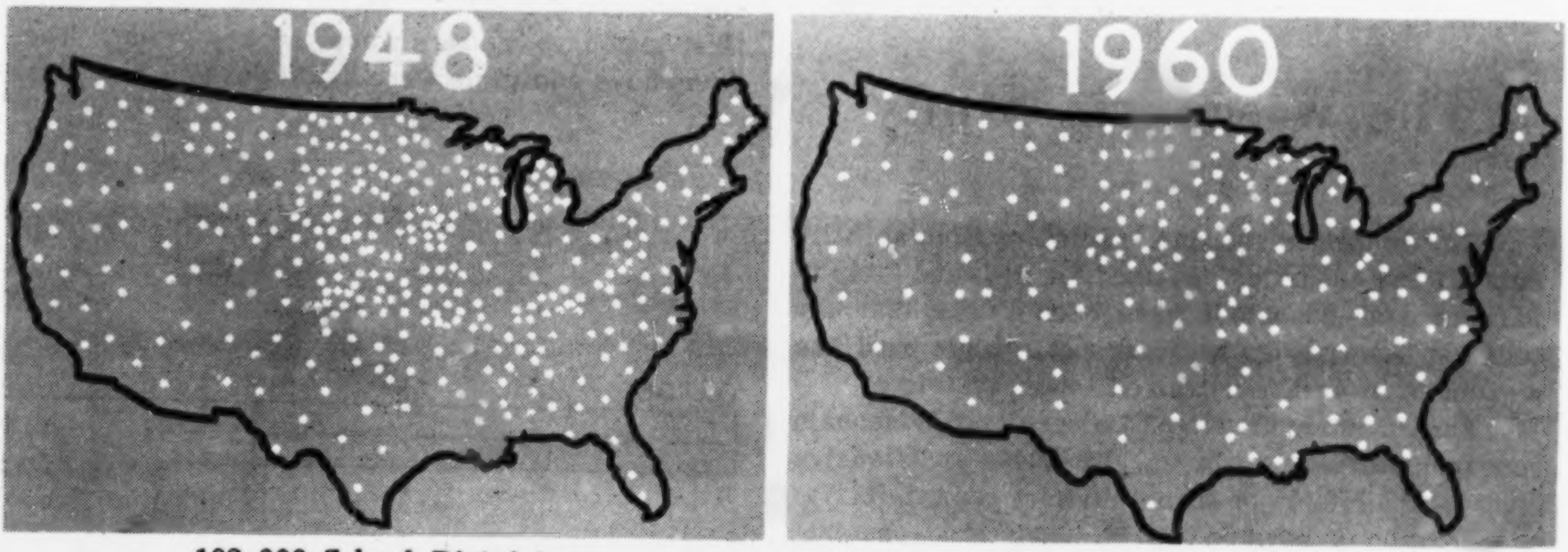
Burton W. Kreitlow

WHAT is a good school district? This question has been asked in rural areas for over a century. Many educators and community leaders feel that reorganization can mean better school districts and improved education for boys and girls.

School district reorganization is the combining of two or more districts into a single system, operating from either kindergarten or grade one through grade 12.

Maps below show a great change in the number of United States school districts from 1948 to 1960 -- a decrease from 102,000 to 35,000 school districts. This decline is mostly due to the combining of small districts into reorganized ones.

The illustration above identifies three of many possible ways in which school districts can reorganize. At the left, there is little change in school location -- one-room schools and the two high schools continue separate operation. In the center, the smaller grade schools and two high schools are



102,000 School Districts

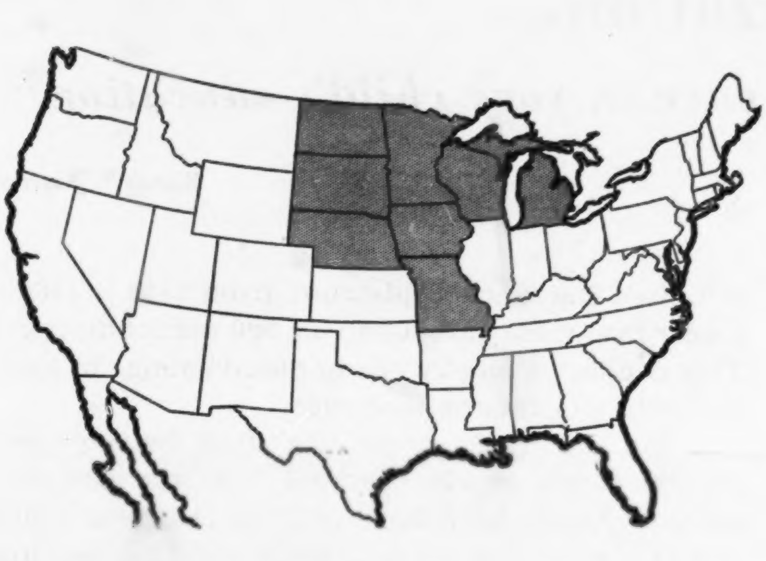
35,000 School Districts

AGRICULTURAL EXPERIMENT STATION
University of Wisconsin — MADISON

combined into one high school and four multi-room grade schools. At the right, there is a single school for all ages, probably in a village center.

School boards can make these and many other arrangements when they unify a community's total elementary and secondary school program under a single administration.

The one-room school is often associated with the non-reorganized district. The map below illustrates that the bulk of one-room schools in the United States is in the Midwest. In 1959 the U.S. had about 24,000 such schools. And about 15,000 were in the Midwest states of Iowa, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota and Wisconsin.



Eight Midwestern States Have 15,000 of the 24,000 One-Room Schools in the United States (1959).

The Wisconsin Study

"Does school district reorganization actually improve the education provided for boys and girls?" Parents and educators have been asking that key question throughout the years of change and the movement toward reorganized school districts.

This question prompted University of Wisconsin research workers to begin, in 1949, an intensive study of the effects of school district reorganization on education of boys and girls. This study has attempted to determine whether reorganization has changed educational programs or communities in any of these four ways:

1. In opportunities provided for youngsters.
2. In actual school achievement of the boys and girls.
3. In the relationship between achievement and cost of education.
4. In the amount of farmers' social and economic contacts with the village center.

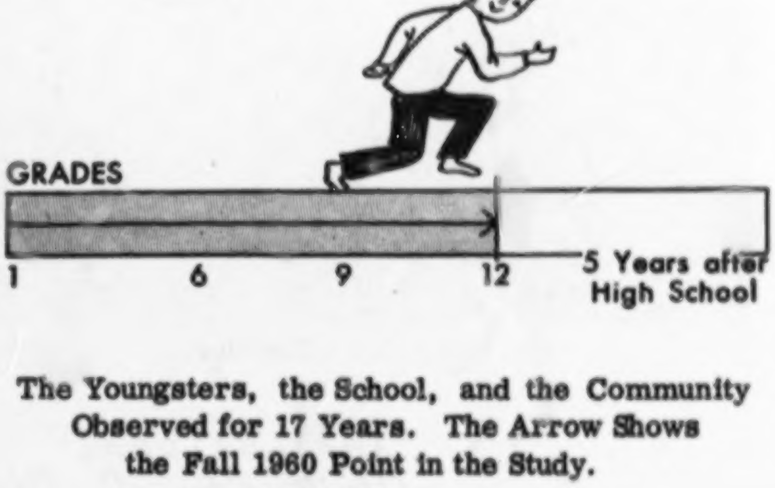
The Study Design

The basic design was to select five newly reorganized rural community school districts and compare them over the years with communities having the more traditional Midwest pattern of small independent districts in rural areas and independent districts in the village.

Newly reorganized districts were chosen to represent varying levels of good reorganization, based on criteria established by educational authorities. Those criteria included factors such as number of pupils, buildings, size of community, tax base, bus transportation, a community with common interests, and others. Non-reorganized communities were then matched with reorganized districts as to wealth, population size and distribution, topography, type of farming, nearness to city, and total area.

Two of the reorganized communities selected were close enough to the established criteria as to be called well reorganized communities. Two others were considerably smaller in area, wealth, number of pupils, and potential educational program than the criteria demanded. The fifth reorganized community met only some of the criteria.

A unique aspect of this study is its long time nature. The figure below shows the length of time youngsters, the school, and the community are observed and compared. In the first year of study, first grade youngsters were the key group. These same boys and girls were again the key group when



The Youngsters, the School, and the Community Observed for 17 Years. The Arrow Shows the Fall 1960 Point in the Study.

they reached grades 6 and 9. They will be studied in grade 12, and a follow-up will be made five years after they graduate from high school.

This report deals with the results of observing, testing, and comparing these youngsters in reorganized and non-reorganized districts from grade 1-9. The grade 12 measurement will begin soon.

Results of the Study

Opportunities Available

At every grade level, total opportunities provided for boys and girls were greater in reorganized districts than in non-reorganized ones. This was true for availability of such items as library books, equipment for aiding mathematics and science classes, modern maps and globes, other audio-visual equipment, supervisory service for teachers, and special teachers or supervisors in art, music, and physical education. Thus far, however, the study shows no difference in level of teacher training.

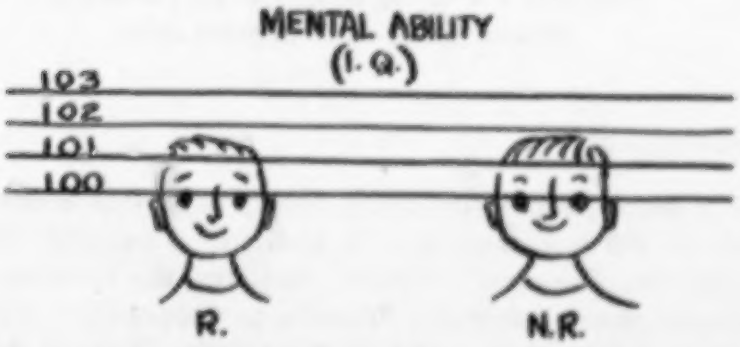
Educational Achievement

But even with these differences in opportunity, the most important question is whether children in reorganized districts actually learned more in the subject matter areas of the curriculum. To answer this we must first have some measure of whether boys and girls in these two types of school districts had equal capacity to learn. Results of an intelligence test, as shown below, demonstrate that the youngsters in reorganized and non-reorganized districts started first grade with the same average intelligence.

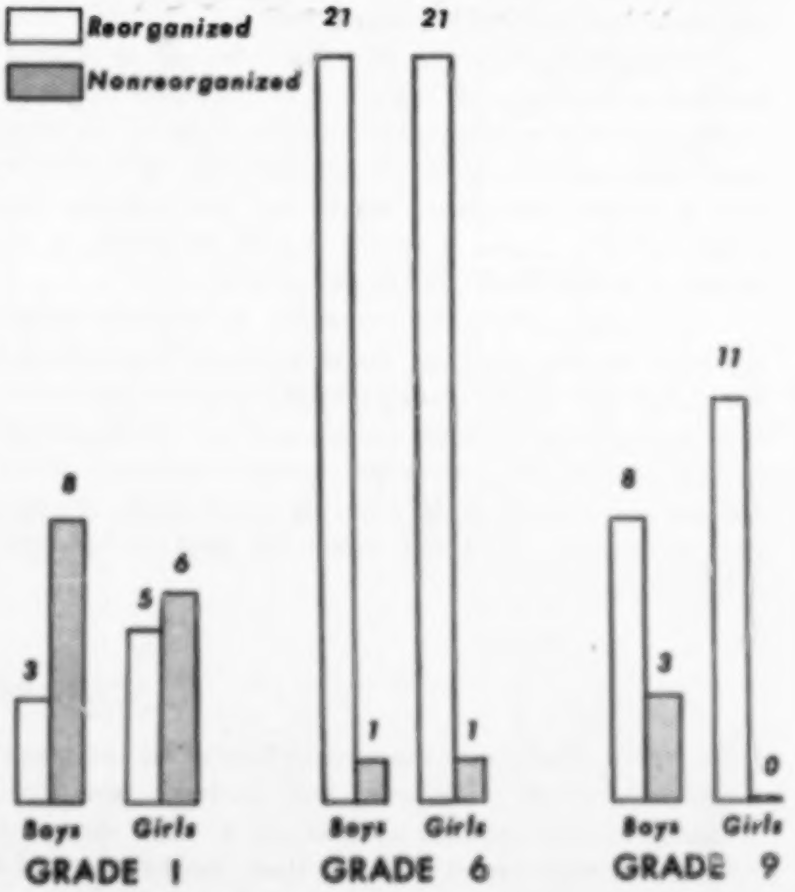
How do they then compare on achievement? In first grade (schools in the first year of reorganization) there were some achievement test advantages for youngsters in non-reorganized districts. For example, boys in the non-reorganized districts had higher reading test scores. But when these boys and girls reached the sixth grade the situation reversed -- there was consistent superiority in achievement favoring youngsters in reorganized districts. There was an advantage in reading and in arithmetic and both boys and girls in reorganized districts had significantly higher test scores in science.

By the time these youngsters had completed the sixth grade, a number of non-reorganized communities were making sharp changes in their district organization. In fact, three of these communities had moved sufficiently toward the criteria of good organization so that they were somewhat comparable to the reorganized districts when the study started six years earlier. Yet reorganization came too late to be of much help to these school districts -- when the boys and girls were tested as ninth graders, the differences in scores were maintained.

The graph below presents the information in more detail. It shows that youngsters in non-reorganized schools had higher achievement scores in first grade -- boys were ahead on eight of 11 tests and girls ahead on six. Of 22 measures at sixth grade, both boys and girls in reorganized districts



Boys and Girls in Reorganized and Non-Reorganized Districts had the Same Mental Ability.



Between Grades 1 and 9 the Reorganized Districts Moved Ahead on Achievement.

were ahead on 21. At the ninth grade, boys of reorganized districts were ahead on eight of 11 measures, and girls were ahead on all 11.

Costs of Instruction

The evidence on opportunities and achievement shows considerable advantage for boys and girls in reorganized districts. The question the parent, educator, and tax payer must answer is whether improved opportunities and higher achievement are worth what they may cost.

A careful review of instruction costs for elementary grades in both types of school districts indicates that reorganized districts spent more money per pupil for instruction than did non-reorganized districts. During the first six years of school, instruction costs averaged $142 per pupil per year in reorganized districts, and $130 per pupil per year in non-reorganized districts.

But this higher cost in reorganized districts is reflected in greater achievement -- boys and girls in reorganized schools had total test scores of 276 and 322 respectively compared to 266 and 288 in non-reorganized districts. Thus for the extra $12 per pupil per year in instruction cost, achievement totaled 10 points higher for boys and 34 points higher for girls in reorganized districts.

One must judge for himself whether this is a sufficient increase in learning to conclude that reorganization is worthwhile. But in light of the distance between the level of organization of some of the communities under study and the criteria for good reorganization which should be reached, it seems a substantial achievement gain.

A closer look at achievement in each community tells us that most of the difference is accounted for in the two larger reorganized communities studied (approximately 1500 students from kindergarten through grade 12). Smaller reorganizations, which did not come as close to meeting the criteria of good reorganization, did not seem to pay off in pupil achievement.

Farmer Contact with Village

The final concern of the investigation was whether reorganization affected farmers' social and economic contact with the village center. Supporters of school reorganization have long argued that when a community develops a single school district from kindergarten through high school, people of the farm service area sharply increase contact with the village. Research to date does not support this theory. Increases in contacts by farmers in reorganized districts were only slightly greater than increases in non-reorganized communities during nine years of the investigation.

Summary

- Boys and girls in reorganized districts had greater educational opportunities.
- Reorganized districts produced higher academic achievement as shown by standardized achievement tests.
- Instruction in reorganized districts costs $12 more per elementary pupil per year.
- Reorganizing districts made no significant changes in social and economic contacts between farmers and the village center.

All in all, this research has piled up a substantial amount of evidence that reorganization of school districts does improve the education for boys and girls -- the kind of school district in which children live does make a difference.

Arithmetic Scores Higher
Total Achievement Greater
Special Teachers Available
Better Instructional Materials
Better Reading Comprehension
Greater Achievement in Science

There is a Pile Up of Evidence Favoring School District Reorganization

ACKNOWLEDGEMENTS

This study was made possible by the cooperation of many people, including county superintendents, administrators, teachers, and students of the schools in the ten communities studied. Financial aid and graduate student assistance on the research came from several sources, including the Graduate School, Department of Education, Department of Agriculture and Extension Education, Cooperative Extension Service, and the Numerical Analysis Laboratory of the University of Wisconsin. Part of the research reported herein was performed pursuant to a contract with the United States Office of Education, Department of Health, Education and Welfare.

The findings in the media study give no uniform pattern of differences in effectiveness in favor of one of the media over all of the others. However, hypothesis H_{o5}, "There are no differences in the amount of knowledge gained by adults from research findings presented by lecture, bulletin, 16 millimeter film, or television," is rejected in part. Of the media used, the lecture, when given by the researcher, gives the most consistent communication of knowledge of the research findings.

As a result of the findings in Groups II, III, and V, where knowledge gained from lecture, bulletin, and film were compared, hypothesis H_{5a}, "There are no differences in the amount of knowledge gained by adults from research findings presented by lecture, bulletin, or 16 millimeter film between presentations made by lay leaders and by the researcher," is rejected.

Adults giving both immediate and delayed responses retained significantly more when the information was presented by the bulletin. Hence, hypothesis H_{5b}, "There is no difference in the amount of knowledge of research findings retained when presented by either television or bulletin," was rejected.

Although differences in the effectiveness of the four media exist, conclusions must be made with caution. Because the lecture was the most consistent of the media, one might conclude that a researcher's lecture on his results is an appropriate means of distributing research findings.

However the difference between scores when researchers presented the information, and when it was presented by local leaders, suggests that the setting may be as important as the media in transmitting research results.

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Appendix C--Citizens' Check Sheet

My Knowledge of School District Reorganization

(Circle the letter before the answer which you think is correct.)

For Research Only
B. W. Kreitlow

1. Research on school reorganization has shown that the opportunities provided for youngsters (maps, books, laboratories, special teachers, etc.) are:
    - A. Less in reorganized districts.
    - B. Greater in reorganized districts.
    - C. About the same in reorganized and non-reorganized districts.
2. Research on school district reorganization has shown that the cost of instruction for each elementary school pupil is:
    - A. Less in reorganized schools.
    - B. Greater in reorganized schools.
    - C. About the same in reorganized and non-reorganized schools.
3. How did youngsters in the reorganized and non-reorganized school districts compare as to their measured intelligence?
    - A. The youngsters in reorganized districts had higher intelligence.
    - B. The youngsters in non-reorganized districts had higher intelligence.
    - C. There was no difference in measured intelligence.
4. When reorganization of school districts occurs, where do youngsters attend school?
    - A. The school board of the reorganized district determines where the children will attend.
    - B. The state decides where the children will attend.
    - C. The children are moved to a central school.
    - D. No change in attendance can be made.
5. Which of these statements best describes school district reorganization?
    - A. The curriculum of the school is changed.
    - B. Two or more districts combine into a single system with grades kindergarten or one through 12.
    - C. The one- and two-room schools are closed and all children go to school in town.
    - D. Two or more communities operate a single high school.
6. On the 22 measures of achievement of boys and girls in the sixth grade, on how many measures did youngsters in reorganized schools score higher?
    - A. 1.
    - B. 8.
    - C. 14.
    - D. 21.
7. The research shows that within the five reorganized districts in the study, student achievement:
    - A. Was highest in the larger reorganized districts.
    - B. Was about equal in all the reorganized districts.
    - C. Was highest in smaller reorganized districts.
    - D. Was less than in the non-reorganized districts.
8. When a community reorganizes its schools, the business and social contacts the farmers have with the people in the village are:
    - A. Greatly decreased.
    - B. Slightly decreased.
    - C. Slightly increased.
    - D. Greatly increased.

9. The greatest change in the number of differences in achievement test results between youngsters in reorganized and non-reorganized districts was found at which grade?
   - A. First.
   - B. Sixth.
   - C. Ninth.
   - D. There are no differences.

The following items are related to Wisconsin research findings on school reorganization: Circle (A) if you believe the statement is a finding of the study, (B) if you believe the statement to be not a finding, (C) if you don't know.

A B C 1. Results of Wisconsin research tend to support reorganization of districts with at least 1500 students.

A B C 2. As the population of the United States has increased, there has been an increase in the number of school districts.

A B C 3. In the 9th grade the boys in reorganized districts were ahead in more achievement tests than were the girls.

A B C 4. There are more library books available for youngsters in reorganized districts.

A B C 5. There are more one-room school districts in eight Mid-Western states than in all the rest of the states combined.

A B C 6. Youngsters in non-reorganized districts scored higher than youngsters in reorganized districts in first grade achievement tests.

A B C 7. As non-reorganized districts moved toward the criteria of good organization, their youngsters caught up in achievement scores with the youngsters in the reorganized districts.

A B C 8. By the 6th grade the girls in reorganized districts had higher Science Test scores than girls in non-reorganized districts.

A B C 9. In the schools studied, when more money was spent on instruction in art, music, and physical education, the test scores on reading and arithmetic went down.

A B C 10. Research shows that the kind of a school district in which children live makes a difference in their education.

Citizens' Check Sheet

1. County ______________________
2. Highest grade of School attended ____________
3. Do you live in a reorganized district? ________
4. Do you live on a farm? ________
5. Before answering the questions on the check sheet, please answer this one:

How much do you think you learned from the material presented?

Nothing	Little	Average	Much	Very Much

COMMENT ____

____

____

Appendix D--Parents' Questionnaire

University of Wisconsin
College of Agriculture
Research Project

Directions: Please check (✓) or answer all questions as correctly as you can. Feel free to write comments on the margins of the paper. Please return the questionnaire to the teacher of your sixth grade child.

Your name ______________________ Your Address ______________________
Your sixth grade child's name ______________________________________

I. Your house and equipment (place a check (✓) in front of the correct answer or write the correct answer.)
1. What kind of a house is it? (a) ______ Brick (b) ______ Stucco
(c) ______ Painted frame (d) ______ Unpainted frame
(e) ______ Other (describe) ______________________
2. __________ How many rooms do you use in your house? (Do not count bathroom, pantry, breakfast nook or basement)
3. __________ How many persons live regularly in your house?
4. What kind of lighting does your house have?
(a) ______ Electric (b) ______ Gas, mantle or pressure (c) Oil lamps
(d) ______ Other (describe) ______________________
5. ______ Is drinking water piped into your house?
6. How is your washing done? (a) ______ Power machine (b) ______ Hand machine
(c) ______ Without machine (d) ______ Washing sent out
7. How do you keep food cold? (a) ______ Mechanical refrigerator (b) ______ Ice box
(c) ______ Deep freeze (d) ______ None
8. __________ Do you have a radio ? (answer yes or no)
9. __________ Do you have a television set? (answer yes or no)
10. __________ Do you have an automobile? (do not count a truck or pick-up)
11. __________ Do you take a daily newspaper?

II. Your family
1. __________ What is the last grade in school *completed* by the *wife?*
2. __________ What is the last year in school *completed* by the *husband?*
3. __________ Does the *wife* attend at least ¼ of the regular meetings of the church?
4. __________ Does the *husband* attend at least ¼ of the regular meetings of the church?

______ 49 - 50

51. How much education do you want your sixth grade child to have? (Check in proper blank)
1. ______ Grade School
2. ______ High School
3. ______ Trade School
4. ______ College
5. ______

52. __________ How many children do you have?
53. List the clubs and organizations of which the wife is a member.
______________ ______________ ______________
______________ ______________ ______________

List the clubs and organizations of which the husband is a member.
______________ ______________ ______________
______________ ______________ ______________

54. If you belong to a church check (✓) the denomination.
1. ______ Lutheran
2. ______ Catholic
3. ______ Presbyterian
4. ______ Methodist
5. ______ Protestant (name)
6. ______ Other Protestant
7. ______ Mixed (Husband and Wife)
8. ______

55. Check (✓) the nationality background of both you and your (wife or husband)

Husband *Wife*

1. ______ ______ Swede or Norwegian
2. ______ ______ Dane
3. ______ ______ German
4. ______ ______ Polish
5. ______ ______ English

Husband *Wife*

6. ______ ______ Scotch
7. ______ ______ Irish
8. ______ ______ Bohemian
9. ______ ______ Other
10. ______ ______ Mixed

III. *Your Farm* (If you *do not live or work on a farm* please leave Part III blank)

(If you live or work on a farm, please complete Part III.)

56. What is your tenure status?

1. ______ owner
2. ______ renter
3. ______ laborer
4. ______ Owner and renter
5. ______ Other (explain)

57. How many acres of land are in your farm:

1. ______ 1 - 40 acres
2. ______ 41 - 80 acres
3. ______ 81 - 120 acres
4. ______ 121 - 160 acres
5. ______ 161 - 200 acres
6. ______ 201-240 acres
7. ______ 241 - 280 acres
8. ______ 281 - 320 acres
9. ______ Over 321 acres
10. ______

How many acres are under cultivation? ______________

58. How many dairy cows do you have?

1. ______ none
2. ______ 1 - 5 cows
3. ______ 6 - 10 cows
4. ______ 11 - 15 cows
5. ______ 16 - 20 cows
6. ______ 21 - 25 cows
7. ______ 26 - 30 cows
8. ______ 31 - 35 cows
9. ______ 36 or more cows
10. ______

58 A. Has your family or your (wife's or husband's) family helped you in getting your farm through any of the following ways:

1. ______ inheritance
2. ______ aid in purchase
3. ______ No assistance

58 B. Do you think one of your children should take over your farm?

1. ______ Yes - definitely
2. ______ Yes - if interested
3. ______ No

IV. Your occupation

59. ______________ What is your (husband's) main occupation?

V. Your Neighborhood

Please encircle the name of the neighborhood in which you live. If the neighborhood is not listed, please write it in. Corwin, Lloyd, Valton ______________

Place a check (✓) before each of the following activities that you and your neighbors do together.

( ) 1. We help each other in cases of illness or death or other emergencies in the neighborhood.
( ) 2. We visit with other families and they visit with us.
( ) 3. We exchange tools and machinery.
( ) 4. We exchange work.
( ) 5. We borrow and lend money, food and other items.
( ) 6. We have picnics.
( ) 7. We go hunting and fishing.
( ) 8. We play cards, baseball, horseshoe, etc.
( ) 9. We tell each other our hopes and plans for the future.
( ) 10. We repeat jokes and stories about persons or groups of persons in the neighborhood.
( ) 11. We recall and talk about childhood and early experiences in the neighborhood. (These may be your personal experiences or stories of early settlers.)

VI. Where do you do your buying and selling?

For each of the services listed at the left in the following chart, please place a check (✓) in the column under the name of the town, neighborhood or village where you go for *most* of that kind of service. Check only one column for each service. Omit any service that you do not use. If the town is not listed, write in the name of the town on the line following the service.

CAZENOVIA COMMUNITY

SERVICES	Cazenovia	Corwin	Germantown	Ironton	Hub City	Ithaca	LaValle	Lloyd	Lime Ridge	Lower Carr Valley	Quaker Valley	Reedsburg	Richland Center	Rock Bridge	Valton	Wonewoc	Yuba	
Banking																		
Church																		
Clothes																		
Dentist																		
Doctor																		
Feeds																		
Furniture																		
Gasoline																		
Groceries																		
Hardware																		
High School																		
Lawyer																		
Library																		
Machinery																		
Movies																		
Newspaper																		
Tractor Fuel																		
Veterinary																		
Sell Dairy products at																		
Sell Livestock at																		
Sell cash crops at																		
Have job at																		

Appendix E--Teacher Interview Schedule {1961}

Column Number	
1-2	____ Year (last two digits)
3-4-5	____ School Number
6-7	____ Number years taught
8-9	____ Years taught at this school
10	____ Training beyond high school (in years)
11	____ Type of teacher certificate 0. permit 1. 1 year license 2. 5 year license 3. Life certificate 4. Other
12-13	____ Age in years
14	____ Membership in local organization 0. None 1-9 for number
15	____ Offices in local organization (Same code)
16	____ Invitations to participate in local programs (Within past year for educational purposes)
17	____ Method of reporting pupil progress 1. Report card 2. Interview 3. 1 and 2 4. Written report 5. Other
18	____ Items on which pupils are evaluated 1. Tests 2. Class 3. Observation 4. Other
19	____ Days of in-service training (local, regional, county, state. Late afternoon or evening sessions count as ¼ day.)
20	____ Participation in planning 2. Yes 1. No
21	____ Attendance at past two summer sessions 2. Yes 1. No
22	____ Plans for attendance in either of the next two summers 2. Yes 1. No
23-24	____ Last year of professional training (last 2 digits)
25	____ Visits to other class rooms for purposes of improving your teaching during past year 2. Yes 1. No
26	____ Special music teacher 0. No 1. Available, not used 2. Available and used
27	____ Special art teacher 0. No 1. Available, not used 2. Available and used
28	____ Special handicapped (Same as above)
29	____ Special Phy Ed teacher (Same as above)
30	____ Guidance specialist (Same as above)
31	____ Adult classes meet in this school (Same as above)
32	____ School bus transportation (Same as above)
33	____ Movie projector (Same as above)
34	____ Slide projector (Same as above)
35	____ Radio (Same as above)
36	____ Piano (Same as above)
37	____Health, Nurse (Same as above)
38	____ Dental Examination (Same as above)
39	____ Physical examination (Same as above)
40	____ Hot lunch (Same as above)
41	____ Planned testing program (Same as above)
42	____ Telephone (Same as above)
43	____ Accident insurance (Same as above)
44*	____ Library corner 2. Yes 1. No
45	____ Picture books
46	____ Color books
47	____ Play table
48	____ Puzzles
49	____ Building blocks
50	____ Easel
51	____ Wall pictures
52	____ Science corner
53	____ Scales
54	____ Eye chart
55	____ Audiometer
56	____ 4 pre-primers
57	____ 4 primers
58	____ Phonograph
59	____ Rhythm materials
60	____ Toilets 1. indoor 2. outdoor

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* Any item underscored pertains only to 1st grade teacher interview.

Appendix E---Continued

Column Number	
61	____ State tested water 2. Yes 1. No
62	____ Central heating by furnace (not a furnace in the class room)
63	____ Fire extinguisher 2. Yes 1. No
64	Works of art used for teaching 2. Yes 1. No
65-66-67-68	____ Volumes in library
69	____ Playroom 2. Yes 1. No
70	____ Desks properly adjusted 0. Not adjusted or adjustable. 2. Yes 1. Adjustable, but not adjusted
71	____ Television 0. No 1. Available, not used 2. Available and used

Appendix F--The Purposes and Processes of Education

University of Wisconsin
Department of Education
B. W. Kreitlow

Name ______________________________ School ______________________________

Judge each of the following statements in light of your own philosophy of Education.

From the scale below select the code number that best describes your agreement with the statement. If you agree completely with item 1 place a one (1) in the blank preceding the item. If you disagree completely place a five (5) in the proper blank. If you are neutral regarding the statement place a three (3) in the proper blank. If your reaction to the statement is between 1 and 3 place a two (2) in the proper blank, etc. *Please answer every item.*

SCALE

1	2	3	4	5
Full agreement		Neutral		Complete disagreement

______ 1. The child is innately good and should be allowed to grow naturally.
______ 2. Learning should be organized around the problems and processes of community living.
______ 3. The child must be disciplined if he is to become a civilized human being.
______ 4. The pupils should help the teacher plan their learning activities so they will be following their interests.
______ 5. The child is neither good nor bad, but may become either, depending upon his experiences.
______ 6. The curriculum should be centered around reading, arithmetic, spelling, history, language, science, and like subjects.
______ 7. How a child feels about what he learns is as important as what he learns.
______ 8. The child should gain knowledge and thus will be educated.
______ 9. Teacher-pupil planning is necessary for the development of good citizenship in a democracy.
______10. Learning activities should be determined by, and centered around, pupil interests.
______11. Competition and rivalry are the best incentives to pupil achievement.
______12. The community is a source of learning materials and experiences.
______13. School children should have a part in activities to improve the community.
______14. Good books are the best source of learning.
______15. The evaluation of the child's learning should be based on how well he is able to solve his daily problems.
______16. A basic aim of education is to help children comprehend, understand, and express their feelings about their experiences.
______17. The study of geometry develops a logical mind.
______18. The child realizes his best self in situations where he can creatively express himself.
______19. The school has a responsibility to help make the community a better place in which to live.
______20. Standard achievement tests are the best means of determining if a pupil should advance to the next grade.
______21. Any teacher must know the community thoroughly and be able to use its resources to be successful as a teacher.
______22. Education may be thought of as a growth, especially in the ability to reconstruct past experiences to solve problems.
______23. Understanding is best promoted by a logical development of the course of study.
______24. The school child should be encouraged to concern himself with important adult problems.

Appendix G--Activity Questionnaire

University of Wisconsin
Department of Education

Please answer all questions as correctly as you can. The purpose of these questions is to find out the number of clubs and organizations you belong to and to find out about your 4-H club membership.

Your Name ______________________________ 1-2
Your School ______________________ Your Grade ________ 3-5
Please check (✓) or list the clubs and organizations to which you have ever belonged
Boy Scouts or Girl Scouts ____________ a 4-H Club ____________ 6-7
School clubs (list) ____________ Please list others ____________
Church clubs (list) ____________ ____________

Is there a 4-H Club in your neighborhood? (Check ✓ one): Yes ______ (1) No ______ (2) 8

Are your parents interested in your being a 4-H Club member? (Check one ✓):
Very interested ____________ (1) They don't care ____________ (3) 9
Interested ____________ (2) They don't want me to join ________ (4)

Are either of your parents now a local 4-H Club leader?
(Check one ✓): Yes ______ (1) No ______ (2) 10

Have either one of your parents ever been a local 4-H Club Leader?
(Check one ✓): Yes ______ (1) No ______ (2) 11

Have your brothers or sisters ever been 4-H Club members?
(Check one ✓): Yes ______ (1) No ______ (2) I have none ______ (3) 12

Did you belong to a 4-H Club this year? (Check one ✓): Yes ______ (1) No ______ (2) 13
If you didn't, why haven't you joined? (Please check one ✓): 14
____The club is not easily available
____Not interested
____Already belong to other clubs
____Too many other things to do
____My parents do not approve
____No information about club work
____No opportunity to have projects
____I don't know
____If you have other reasons for not joining please write them in here ____________
____
____

How many years have you been a 4-H Club member? (Include this year) ______ (1) 15

If you are now, or ever have been a 4-H Club member, please complete the rest of the questions. (If you have never been a 4-H Club member, stop here)
If you once joined and then dropped your 4-H Club work, why did you drop it?
(Please Check one ✓): 16
____The club is not easily available
____Not interested
____Too many other things to do
____My parents do not approve
____The club program was weak
____The club disbanded
____Because of the leaders
____I don't know
If you can think of other reasons please list them here ____________
____
____

If you now belong or ever did belong to a 4-H Club, please list the projects in which you were enrolled each year:

1956 ________________________________ 17
1957 ________________________________ 18
1958 ________________________________ 19
1959 ________________________________ 20
1960 ________________________________ 21

Please circle each of the projects above for which your record book was completed. Do this for the projects listed for each year. 22-23

Check (✓) all of those things listed below which you did as a 4-H Club member: 24-25

Gave a 4-H demonstration ________ (1)
Gave a 4-H talk ________ (2)
Judged ________ (3)
Worked on a club committee ________ (4)
Exhibited at the fair ________ (5)
Went to a 4-H camp ________ (6)
Went on a 4-H tour ________ (7)
Played on a 4-H team ________ (8)
Won an award ________ (9)
Attended a district or state 4-H event ____ (10)

Have you ever been an officer in your Club? Please check all of the right answers: 26-27

I have been:

President ________ (1)
Vice President ________ (2)
Secretary ________ (3)
Treasurer ________ (4)
Recreation leader ________ (5)
Reporter ________ (6)
Junior Leader ________ (7)
I have not been an officer ________ (8)

Where is your 4-H Club meeting usually held? (Check one ✓): 28

In a home ________ (1)
In a school ________ (2)
In a hall ________ (3)
In a church ________ (4)
In some other place ________ (5)

How many members are there in your 4-H Club? ________ (1) 29-30

How many times each year does your Club meet? (Check one ✓): 31

13 times or more ________ (1)
10-12 times ________ (2)
6-9 times ________ (3)
5 or fewer times ________ (4)

How many times did you attend last year? ________ (1) 32

Do your parents ever attend 4-H Club meetings with you? (Check one ✓): 33

Always ________ (1)
Sometimes ________ (2)
Seldom ________ (4)
Never ________ (5)

What do you like best about 4-H Club work? (Please check one ✓): 34

____The opportunity to learn
____The Regular Meetings
____Working with other boys and girls (belonging)
____Special events (fairs, tours, trips, etc.)
____The projects
____I don't know

If you can think of other things, please list them here ________________________________

____

____

What do you think would make 4-H Club work better? (Please check one ✓): 35

____More and better project work (project meetings)
____A larger membership group
____More and better leaders
____More recreation
____More parent participation
____More awards, tours, trips
____Keep it the way it is
____I don't know

If you can think of other things please list them here ________________________________

____

Appendix H--Interest Record

University of Wisconsin
Department of Education
Madison, Wisconsin

Directions:

In this booklet you will find a large number of things that students might do. You will like to do some things better than others.

You are to read the *things to do*. They are arranged in groups of two. You are to select the one which you like best to do in each group and place a check mark (✓) in the square over its code letter on the answer sheet. The following example will help you:

Example

X Go on a picnic

Y Read a book

Find the *Example* on your answer sheet. If you would rather go on a picnic than read a book, you would make a check mark in the square over X. If you would rather read a book, you would place a check mark in the square over Y. Now place a check mark in the square over the letter that stands for your choice.

Do all the pairs this way. Decide which one you prefer or like best and make a check mark in the square over its letter. Even if you would like to do both things, check only one letter to show which one you would like best. Do not spend a lot of time trying to decide. Make up your mind quickly and go on to the next pair. Work rapidly, but do not omit any pair. You may not like either answer very well but choose the one you like best.

Remember:

Put your answers on the answer sheet only. Check only one letter in each pair to show which thing you would rather do. Be sure that you check the letter on the answer sheet that stands for the same item as in the booklet.

Things to do

I. R Play a musical instrument
(1)
T Read a magazine

V Go to a movie with my friends
(2)
W Go to a movie by myself

S Talk about painting a picture
(3)
T Talk about books I have read

N Play on a baseball team
(4)
P Learn how to take better care of farm animals

V Show visitors around our school
(5)
W Write an article about our school

II. O Go fishing
(1)
P Plant seeds in a garden

W Read a story to myself
(2)
V Tell a story to someone else

P Learn what feed is best for chickens
(3)
T Listen to someone read a story

O Set traps to catch wild animals
(4)
Q Fly a kite

O Go on long hikes or climb mountains
(5)
R Listen to music on the radio

III. V Take a trip with the students in school
(1)
W Take a trip by myself

N Play baseball or softball
(2)
Q Play marbles

O Go camping in the woods
(3)
R Sing songs

W Play a game all by myself
(4)
V Play a game with my friends

N Play on a ball team
(5)
S Make a poster for our classroom wall

Appendix H---Continued

IV. O Go hunting
(1)
P Learn what is the best feed for calves

N Play football
(2)
T Look at books in a library

N Take part in running races
(3)
Q Climb trees

W Go fishing or hunting by myself
(4)
V Go fishing or hunting with a group of friends

O Go camping in the woods
(5)
S Draw a pretty picture

V. P Feed corn to pigs on a farm
(1)
Q Play with toys or games

O Go hunting alone in the woods
(2)
T Read a magazine

N Play basketball
(3)
R Play a musical instrument

V Take part in a play
(4)
W Read a play to myself

O Ride horseback
(5)
S Draw pictures to help tell a story

VI. N Play outside
(1)
T Read a story book from the library

P Work or play with farm animals
(2)
R Make up some songs to sing

O Go fishing
(3)
T Look at books in a library

P Help work on a farm
(4)
S Paint a picture

Q Play marbles
(5)
R Sing with other students at a school program

VII. P Learn how to raise apple trees
(1)
T Read a story

W Go someplace by myself and paint a picture
(2)
V Talk with other students about the pictures I paint

Q Learn to skate
(3)
S Talk with other students about painting or art

V Sing songs with my friends
(4)
W Practice singing by myself

Q Ride a bicycle
(5)
R Play a musical instrument in a band

VIII. O Go on long hikes or climb mountains
(1)
Q Climb trees

P Drive a tractor on a farm
(2)
Q Fly a kite

W Keep a secret
(3)
V Tell someone the latest news

P Take care of a garden
(4)
R Play a musical instrument in a band

Q Roller skate
(5)
T Read a comic book

IX. R Take music lessons
(1)
S Look at famous paintings

N Run races with my friends
(2)
O Ride horseback

S Make posters for the classroom walls
(3)
T Read a story book

V Study a lesson with several of my friends
(4)
W Study a lesson by myself

N Play basketball
(5)
S Draw pictures

X. P Look at the animals at a fair
(1)
S Look at painted pictures

R Take music lessons
(2)
T Listen to someone read a story

N Play baseball or softball
(3)
V Go to a party

Q Ride a bicycle
(4)
S Draw pictures about a story I know

N Take part in a swimming contest
(5)
R Listen to music on the radio

XI. Q Play with toys or games
(1)
T Talk about books I have read

R Make up songs
(2)
S Draw funny pictures

W Take a long walk by myself
(3)
V Take a long walk with my friends

N Play on a baseball or softball team with my friends
(4)
O Go hunting for rabbits in the woods

W Play a game I can play by myself
(5)
P Learn how to raise better chickens

Appendix I--Related University of Wisconsin Studies

Brack, Robert E., *A Study of the Relationship of Family Background and Status to the Age of Joining and Persistence in 4-H Club Work of Students in the Ninth Grade in Ten Wisconsin Counties*, Seminar Report, 1961, 87 p.

Bragg, Desmond H., *A Study of the Size-Cost-Achievement Relationships in the Reorganized School Districts of Wisconsin*, Doctor's Thesis, 1960, 127 p.

Dowling, William Dean, *A Study of the Personal and Social Behavior of Boys and Girls in Reorganized and Non-Reorganized School Districts*, Doctor's Thesis, 1959, 128 p.

Edwards, William, *A Comparison of the Effectiveness of the Lecture, Bulletin, Film, and Television in Presenting Research Findings*, Seminar Report, 1961, 63 p.

Eisemann, Carl, *A Restudy of the School Districts in Two Rural Communities to Determine the Effects of Reorganization*, Doctor's Thesis, 1956, 144 p.

Koyen, Roland A., *An Analytical Study of Two Types of School District Organization*, Doctor's Thesis, 1951, 270 p.

Middleton, Curtis O., *A Comparison of the Family Background and Status Between 4-H Members and Non-4-H Members who are in the First and Sixth Grades of School in Ten Wisconsin Communities*, Seminar Report, 1958, 103 p.

Pierce, Lowell L., *A Comparison of Mental Ability and School Achievement of 4-H Club Members and Non-Members in Ten Wisconsin Communities*, Seminar Report, 1958, 67 p.

Prasad, Chandrika, *A Comparison of Personal and Social Development and Interest Patterns Between Matched Groups of Ninth Grade 4-H and Non 4-H Members in Ten Wisconsin Rural Communities*, Doctor's Thesis, 1961, 137 p.

Russell, George, *A Study of Ten Wisconsin Communities to Determine the Relationship of School District Organization to Community Development*, Seminar Report, 1957, 50 p.

Shipla, Otto J., *A Study of Certain Supervisory Practices in the Schools of Ten Wisconsin Communities*, Doctor's Thesis, 1956, 481 p.

Subaima, Guthikonda V., *A Comparative Study Among 4-H Girls of Four Years and Over One and Two Year 4-H Drop-Outs and Non 4-H Girls of Ninth Grade in Ten Selected Communities of Wisconsin to Determine Differences in School Achievement and Social Behavior*, Doctor's Thesis, 1961, 124 p.